

=> fil reg
FILE 'REGISTRY' ENTERED AT 18:12:30 ON 15 DEC 2006
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(FILE 'HOME' ENTERED AT 15:12:01 ON 15 DEC 2006)

FILE 'HCAPLUS' ENTERED AT 15:12:33 ON 15 DEC 2006
L1 1 SEA US2004137332/PN

FILE 'REGISTRY' ENTERED AT 15:13:27 ON 15 DEC 2006
L2 15 SEA (463-79-6/BI OR 1072-53-3/BI OR 108-86-1/BI OR

FILE 'REGISTRY' ENTERED AT 15:20:45 ON 15 DEC 2006
L3 STR
L4 SCR 2043 OR 1839

FILE 'LREGISTRY' ENTERED AT 15:26:03 ON 15 DEC 2006
L5 134 SEA (C(L)X)/ELS (L) 2/ELC.SUB
L6 1285 SEA (C(L)H(L)X)/ELS (L) 3/ELC.SUB

FILE 'REGISTRY' ENTERED AT 15:28:05 ON 15 DEC 2006
L7 492 SEA 46.150.18/RID AND ((C(L)X)/ELS (L) 2/ELC.SUB)
L8 41192 SEA 46.150.18/RID AND ((C(L)H(L)X)/ELS (L) 3/ELC.SUB)
L9 0 SEA L2 AND L7
L10 4 SEA L2 AND L8

FILE 'LREGISTRY' ENTERED AT 15:55:31 ON 15 DEC 2006
L11 1199 SEA 46.150.18/RID NOT (A1 OR A2 OR T1 OR T2 OR T3 OR B2
OR LNTH OR ACTN OR A3 OR A4 OR A5 OR A6 OR A8)/PG
L12 1116 SEA L11 NOT PMS/CI
L13 596 SEA L12 AND X/ELS AND C/ELS

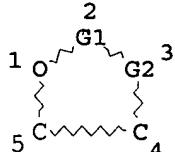
FILE 'REGISTRY' ENTERED AT 16:01:19 ON 15 DEC 2006
L14 50094 SEA L12 AND X/ELS AND C/ELS
SAV TEMP L14 WEI638X/A
L15 STR L3
L16 50 SEA SSS SAM L15 NOT L4
L17 55188 SEA SSS FUL L15 NOT L4
SAV L17 TEMP WEI638A/A
L18 4 SEA L2 AND L14
L19 1 SEA L2 AND L17
L20 STR L15
L21 1 SEA "1,3,2-DIOXATHIOLANE, 2,2-DIOXIDE"/CN
L22 50 SEA SUB=L17 SSS SAM L20
L23 10904 SEA SUB=L17 SSS FUL L20
SAV L23 TEMP WEI638S1/A
L24 STR L15
L25 50 SEA SUB=L17 SSS SAM L24
L26 49101 SEA SUB=L17 SSS FUL L24
SAV L26 TEMP WEI638S2/A
L27 STR L20
L28 50 SEA SUB=L17 SSS SAM L27
L29 10209 SEA SUB=L17 SSS FUL L27
SAV L29 TEMP WEI638S3/A

FILE 'HCAPLUS' ENTERED AT 17:36:04 ON 15 DEC 2006

L30 126 SEA L21
 L31 QUE ELECTROLY?
 L32 17 SEA L21 (L) L31
 L33 59592 SEA L26
 L34 6448 SEA L26 (L) L31
 L35 26694 SEA L29
 L36 6266 SEA L29 (L) L31
 L37 188563 SEA L14
 L38 442 SEA L14 (L) L31
 L39 119 SEA L38 AND (L32 OR L34 OR L36)
 L40 2937 SEA L37 AND (L30 OR L33 OR L35)
 L41 10 SEA L40 AND L30
 L42 2 SEA L41 AND L31
 L43 QUE SOLVENT#
 L44 25 SEA L30 AND L43
 L45 12 SEA L44 AND L31
 L46 980 SEA L40 AND L35
 L47 152 SEA L46 AND L31
 L48 100 SEA L47 AND L43
 L49 85 SEA L48 AND L36
 L50 QUE ESTER#
 L51 QUE ETHER#
 L52 QUE KETONE#
 L53 46 SEA L49 AND (L50 OR L51 OR L52)
 L54 35 SEA L53 AND (1840-2003)/PY,PRY
 L55 11 SEA L45 NOT L42
 L56 34 SEA L54 NOT (L42 OR L55)

=> d 117 que stat

L4 SCR 2043 OR 1839
 L15 STR



VAR G1=B/AL/GA/IN/TI/C/SI/GE/SN/PB/N/P/AS/SB/BI/O/S/SE/TE/PO
 VAR G2=O/N

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED

NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

L17 55188 SEA FILE=REGISTRY SSS FUL L15 NOT L4

100.0% PROCESSED 87220 ITERATIONS

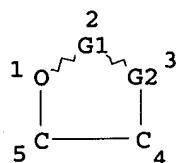
55188 ANSWERS

SEARCH TIME: 00.00.01

=> d 124 que stat

L24

STR



VAR G1=B/AL/GA/IN/TI/C/SI/GE/SN/PB/N/P/AS/SB/BI/O/S/SE/TE/PO
 VAR G2=O/N

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

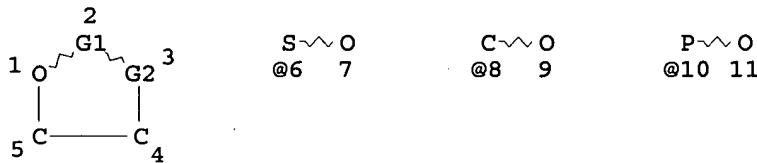
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 5

STEREO ATTRIBUTES: NONE

=> d 127 que stat
 L27 STR



VAR G1=6/8/10

VAR G2=O/N

NODE ATTRIBUTES:

DEFAULT MLEVEL IS ATOM

DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RING(S) ARE ISOLATED OR EMBEDDED
 NUMBER OF NODES IS 11

STEREO ATTRIBUTES: NONE

=> fil hcap
 FILE 'HCAPLUS' ENTERED AT 18:13:02 ON 15 DEC 2006
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=> d 142 ibib abs hitstr hitind 1-2

L42 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:76450 HCAPLUS

DOCUMENT NUMBER: 142:180441

TITLE: Nonaqueous **electrolyte** solution for
 secondary lithium battery and the battery
 Abe, Koji; Miyoshi, Kazuhiro; Kuwata, Takaaki

INVENTOR(S):

PATENT ASSIGNEE(S) : Ube Industries, Ltd., Japan
 SOURCE: PCT Int. Appl., 48 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005008829	A1	20050127	WO 2004-JP10194	200407 16
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2532579	AA	20050127	CA 2004-2532579	200407 16
EP 1650826	A1	20060426	EP 2004-747660	200407 16
CN 1853307	A	20061025	CN 2004-80026556	200407 16
US 2006177742	A1	20060810	US 2006-564852	200601 17
PRIORITY APPLN. INFO.:			JP 2003-198421	A 200307 17
			JP 2003-383403	A 200311 13
			WO 2004-JP10194	W 200407 16

OTHER SOURCE(S) : MARPAT 142:180441
 GI

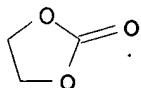
* STRUCTURE DIAGRAM TOO LARGE FOR DISPLAY - AVAILABLE VIA OFFLINE PRINT *

AB The electrolyte solution contains 0.01-10% vinyl carbonate compound I (R1 and R2 = H or C1-4 alkyl groups) and 0.01-10% alkyne compds. selected from II-VII (R's and Y's defined; and x and p = 1 or 2).

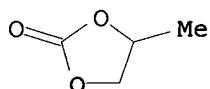
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing vinyl carbonate derivs. and alkyne compds. for secondary lithium batteries)

RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

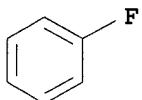


RN 108-32-7 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

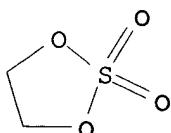


IT 462-06-6, Fluorobenzene 1072-53-3, Ethylene sulfate 1717-84-6
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing vinyl carbonate derivs. and alkyne compds. for secondary lithium batteries)

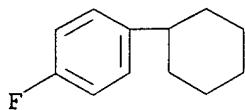
RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 1072-53-3 HCPLUS
 CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



RN 1717-84-6 HCPLUS
 CN Benzene, 1-cyclohexyl-4-fluoro- (6CI, 7CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M004-02; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery **electrolyte** soln vinyl carbonate
 deriv; acetylene group compd secondary lithium battery
electrolyte soln
 IT **Battery electrolytes**
 (electrolyte solns. containing vinyl carbonate derivs. and
 alkyne compds. for secondary lithium batteries)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 623-53-0, Ethyl methyl carbonate 21324-40-3, Lithium
 hexafluorophosphate 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing vinyl carbonate derivs. and
 alkyne compds. for secondary lithium batteries)
 IT 98-06-6, tert-Butylbenzene 452-10-8, 2,4-Difluoroanisole
 462-06-6, Fluorobenzene 536-74-3, Phenylacetylene
 827-52-1, Cyclohexylbenzene 872-36-6, Vinylene carbonate
 1072-53-3, Ethylene sulfate 1120-71-4, 1,3-Propanesultone
 1717-84-6 2049-95-8, tert-Amylbenzene 16156-58-4,
 2-Propynyl methanesulfonate 32042-39-0 36677-73-3 61764-71-4
 71573-77-8, Di(2-propynyl) oxalate 79493-91-7, Dipropargyl
 carbonate 131166-79-5 197244-15-8 347396-84-3 406725-07-3
 833427-83-1
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing vinyl carbonate derivs. and
 alkyne compds. for secondary lithium batteries)

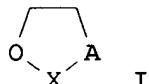
REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L42 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:569731 HCAPLUS *Current application*
 DOCUMENT NUMBER: 141:108932
 TITLE: **Electrolyte** for rechargeable lithium
 battery
 INVENTOR(S): Noh, Hyeong-gon; Song, Eui-hwan
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004137332	A1	20040715	US 2003-743638	200312 22
KR 2004058634	A	20040705	KR 2002-84987	200212

JP 2004214189	A2	20040729	JP 2003-425254	27
CN 1512618	A	20040714	CN 2003-10124613	200312 22
PRIORITY APPLN. INFO.:			KR 2002-84987	200312 27
			A	200212 27

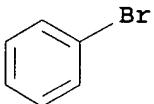
GI



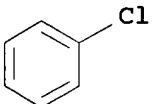
AB Disclosed is an **electrolyte** including a nonaq. organic solvent, a lithium salt and an additive represented by (I) where X is a functional group with Y, where Y is an element belonging to Groups 3, 4, 5, or 6 of the Periodic Table; and A is O or NR, where R is a C1-6 alkyl group; wherein, if X is CO, A is NR. Batteries using such a solvent in the **electrolyte** are less susceptible to swelling without any decrease in capacity or cycle life characteristics.

IT 108-86-1, Bromobenzene, uses 108-90-7,
 Chlorobenzene, uses 462-06-6, Fluorobenzene
 591-50-4, Iodobenzene
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)

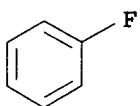
RN 108-86-1 HCPLUS
 CN Benzene, bromo- (8CI, 9CI) (CA INDEX NAME)



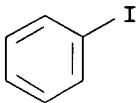
RN 108-90-7 HCPLUS
 CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



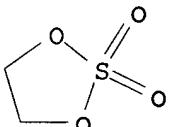
RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 591-50-4 HCAPLUS
 CN Benzene, iodo- (8CI, 9CI) (CA INDEX NAME)



IT 1072-53-3, 1,3,2-Dioxathiolane-2,2-dioxide
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 RN 1072-53-3 HCAPLUS
 CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M004-58
 INCL 429329000; 429231800
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST electrolyte rechargeable lithium battery
 IT Battery electrolytes
 (electrolyte for rechargeable lithium battery)
 IT Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT Secondary batteries
 (lithium; electrolyte for rechargeable lithium battery)
 IT 71-43-2D, Benzene, halogenated 108-86-1, Bromobenzene,
 uses 108-90-7, Chlorobenzene, uses 462-06-6,
 Fluorobenzene 463-79-6D, Carbonic acid, ester, cyclic 463-79-6D,
 Carbonic acid, ester, linear 591-50-4, Iodobenzene
 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate
 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 triflate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT 144-62-7, Oxalic acid, uses 1072-53-3,
 1,3,2-Dioxathiolane-2,2-dioxide
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)

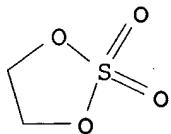
=> d 155 ibib abs hitstr hitind 1-11

L55 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2006:977382 HCAPLUS
 DOCUMENT NUMBER: 145:360086
 TITLE: Nonaqueous electrolytes for lithium
 ion batteries
 INVENTOR(S): Chen, Zonghai; Amine, Khalil
 PATENT ASSIGNEE(S): The University of Chicago, USA
 SOURCE: U.S. Pat. Appl. Publ., 20pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2006210883	A1	20060921	US 2006-373054	200603 10
WO 2006101779	A2	20060928	WO 2006-US8664	200603 10
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GO, GW, ML, MR, NE, SN, TD, TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
PRIORITY APPLN. INFO.:			US 2005-662056P	P 200503 15

OTHER SOURCE(S): MARPAT 145:360086

AB The present invention is generally related to electrolytes containing anion receptor additives to enhance the power capability of lithium-ion batteries. The anion receptor of the present invention is a Lewis acid that can help to dissolve LiF in the passivation films of lithium-ion batteries. Accordingly, one aspect the invention provides electrolytes comprising a lithium salt; a polar aprotic solvent; and an anion receptor additive; and wherein the electrolyte solution is substantially non-aqueous. Further there are provided electrochem. devices employing the electrolyte and methods of making the electrolyte.
 IT 1072-53-3D, Ethylene sulfate, aryloxy compound
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytes for lithium ion batteries)
 RN 1072-53-3 HCAPLUS
 CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



INCL 429326000; 429329000; 429200000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary battery nonaq **electrolyte**

IT Lewis acids

RL: MOA (Modifier or additive use); USES (Uses)
(anion receptor; nonaq. **electrolytes** for lithium ion batteries)

IT **Solvents**

(aprotic, polar; nonaq. **electrolytes** for lithium ion batteries)

IT Cyclophosphazenes

RL: MOA (Modifier or additive use); USES (Uses)
(aryloxy compound; nonaq. **electrolytes** for lithium ion batteries)

IT Secondary batteries

(lithium; nonaq. **electrolytes** for lithium ion batteries)

IT Battery **electrolytes**

(nonaq. **electrolytes** for lithium ion batteries)

IT 60-29-7, Diethyl ether, uses 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-60-4, Propyl acetate 126-33-0, Sulfolane 141-78-6, Ethyl acetate, uses 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 7439-93-2D, Lithium, salt 39457-42-6, Lithium manganese oxide 346417-97-8, Cobalt lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)

RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolytes** for lithium ion batteries)

IT 78-19-3, 3,9-Divinyl-2,4,8,10-tetraoxaspiro[5,5]undecane 84-15-1, o-Terphenyl 84-15-1D, o-Terphenyl, aryloxy compound 86-74-8D, Carbazole, aryloxy compound 88-12-0, 1-Vinylpyrrolidin-2-one, uses 91-19-0, Quinoxaline 91-20-3, Naphthalene, uses 91-22-5, Quinoline, uses 91-22-5D, Quinoline, aryloxy compound 92-52-4, Biphenyl, uses 96-49-1D, Ethylene carbonate, diaryloxy compound 96-54-8, n-Methylpyrrole 101-84-8, Diphenyl ether 101-84-8D, Diphenyl ether, diaryloxy compound 102-09-0, Diphenyl carbonate 102-09-0D, Phenyl carbonate, aryloxy compound 102-09-0D, Phenyl carbonate, diaryloxy compound 102-71-6, Triethanolamine, uses 106-92-3, Allylglycidyl ether 106-99-0, Butadiene, uses 108-32-7D, Propylene carbonate, diaryloxy compound 109-93-3, Divinyl ether 109-97-7D, Pyrrole, aryloxy compound 109-99-9D, Thf, aryloxy compound 110-00-9D, Furan, diaryloxy compound 110-86-1, Pyridine, uses 110-89-4, Piperidine, uses 110-89-4D, Piperidine, aryloxy compound 111-34-2, Butyl vinyl ether 119-65-3, Isoquinoline 120-72-9, Indole, uses 120-92-3D, Cyclopentanone, aryloxy compound 140-67-0, 4-Allylanisole 142-96-1D, Butyl ether, aryloxy compound 176-53-4D, Ethylene silicate, aryloxy compound 176-53-4D, Ethylene silicate, diaryloxy compound 287-23-0D, Cyclobutane, aryloxy compound 288-32-4, Imidazole, uses 288-32-4D, Imidazole, aryloxy compound 289-80-5, Pyridazine 289-80-5D, Pyridazine, aryloxy compound 289-95-2, Pyrimidine 290-37-9, Pyrazine 290-37-9D, Pyrazine,

aryloxy compound 291-37-2D, Cyclotriphosphazene, diaryloxy compound 503-30-0D, Oxetane, aryloxy compound 614-99-3D, Ethyl-2-furoate, aryloxy compound 856-46-2, Tris(4-fluorophenyl) borate 930-22-3 1072-53-3D, Ethylene sulfate, aryloxy compound 1072-53-3D, Ethylene sulfate, diaryloxy compound 1072-60-2, 2-Vinyltetrahydrofuran 1095-03-0, Triphenyl borate 1109-15-5, Tris(pentafluorophenyl)borane 1118-58-7 1337-81-1 1917-10-8, Vinyl-2-furoate 3741-38-6D, Ethylene sulfite, aryloxy compound 3741-38-6D, Ethylene sulfite, diaryloxy compound 3893-03-6, 4-Methoxy-o-terphenyl 4177-16-6, Vinyl pyrazine 4245-37-8, Vinyl methacrylate 4370-23-4, 1-Vinyl-piperidin-2-one 4427-96-7, Vinyl ethylene carbonate 5009-27-8D, Cyclopropanone, 2-aryl derivative 5009-27-8D, Cyclopropanone, 2-aryloxy derivative 5009-27-8D, Cyclopropanone, aryloxy compound 6622-92-0, 2,4-Dimethyl-6-hydroxy-pyrimidine 6919-80-8, Tris(1,1,1,3,3,3-hexafluoropropan-2-yl) borate 7570-02-7, Divinyl carbonate 7791-03-9 10411-26-4D, Butyl carbonate, diaryloxy compound 11099-06-2D, Ethyl silicate, diaryloxy compound 12789-45-6, MEthyl phosphate 12789-45-6D, Methyl phosphate, diaryloxy compound 13537-32-1D, Fluorophosphoric acid, alkyl derivative, lithium salt 14265-44-2D, Phosphate, aryloxy compound 14283-07-9, Lithium tetrafluoroborate 14861-06-4, Vinyl crotonate 15896-04-5 16410-02-9, 1-Vinylaziridin-2-one 18358-13-9D, Methacrylate, aryloxy compound 19024-82-9, Phosphoric acid, trivinyl ester 21324-40-3, Lithium hexafluorophosphate 21994-23-0 23462-75-1, Dihydropyran-3-one 23542-71-4 24213-83-0, Pyrazine, 2,5-divinyl 29383-23-1, Vinylimidazole 29935-35-1, Lithium hexafluoroarsenate 30676-86-9, Piperidine, vinyl 30851-79-7 31094-36-7, Quinoline, vinyl 32766-52-2, Tris(1,1,1,3,3,3-hexafluoro-2-(trifluoromethyl)propan-2-yl) borate 32893-16-6, Methyl vinyl carbonate 33454-82-9, Lithium triflate 33879-62-8, 2-Vinyloxetane 34721-16-9D, Furoate, 2-aryloxy compound 34721-16-9D, Furoate, 2-diaryloxy derivative 35143-18-1 36885-49-1, Vinyl phosphate 37203-76-2, Ethyl phosphate 38888-98-1, Diphenylethane 41824-21-9D, Crotonate, aryloxy compound 41824-21-9D, Crotonate, diaryloxy compound 44414-27-9 44866-76-4 50337-14-9, 3-Vinylcyclopentanone 51222-11-8 53627-36-4, β -Vinyl- γ -butyrolactone 55849-58-6 61548-40-1, Anisole, allyl 65967-52-4 66166-61-8, 3-Vinylcyclobutanone 66281-01-4 66281-16-1 66956-76-1 72607-84-2, 2,4-Divinyl-1,3-dioxane 75454-86-3 77208-21-0 90076-65-6 104531-81-9 117823-03-7 121712-01-4, 1-Vinylazetidin-2-one 125812-49-9 132404-42-3 132843-44-8 139669-84-4 146355-12-6, Tris(pentafluorophenyl)borate 210834-28-9, Tris(1,1,1,3,3,3-hexafluoro-2-phenylpropan-2-yl) borate 210834-35-8, Tris(2,4-difluorophenyl) borate 210834-37-0, Tris(2,3,5,6-tetrafluorophenyl) borate 210834-40-5, Tris(3-(trifluoromethyl)phenyl) borate 210834-42-7, Tris(3,5-bis(trifluoromethyl)phenyl) borate 244761-29-3, Lithium bisoxalatoborate 247229-51-2 365458-32-8, 2-(2,4-Difluorophenyl)-4-fluoro-1,3,2-benzodioxaborole 365458-33-9 365458-34-0 365458-35-1 365458-36-2 365458-37-3 365458-38-4 365458-39-5 365458-40-8 402564-35-6, 2-(3-Trifluoromethylphenyl)-4-fluoro-1,3,2-benzodioxaborole 409071-16-5 557084-91-0 678966-16-0 856785-12-1 866947-06-0 891828-02-7 891828-03-8 891828-04-9 891828-05-0 891828-06-1 891831-48-4 897028-09-0 897028-10-3 897028-11-4 897028-12-5, 2-Amino-4-vinylcyclobutanone 897028-13-6 897028-14-7 897028-15-8 897028-16-9 897028-17-0 897028-18-1 897028-19-2 897028-20-5 897028-22-7 897028-23-8 897028-24-9 897028-25-0 897028-26-1 897028-27-2 897028-28-3 897028-28-3D, diaryloxy compound 897381-31-6 897381-32-7

897381-34-9 897381-36-1 897381-37-2 897381-38-3 897381-41-8
 897381-42-9 897381-44-1 897381-45-2 897381-46-3 897381-47-4
 908587-13-3 908587-22-4 908599-70-2 908599-71-3 908599-72-4
 908599-74-6 910038-86-7 910038-87-8 910038-88-9
 910041-64-4D, aryloxy compound 910041-65-5D, diaryloxy compound
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolytes** for lithium ion batteries)
 IT 7789-24-4, Lithium fluoride, processes
 RL: REM (Removal or disposal); PROC (Process)
 (nonaq. **electrolytes** for lithium ion batteries)

L55 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2006:918504 HCAPLUS

DOCUMENT NUMBER: 145:317962

TITLE: Novel redox shuttles for overcharge protection
of lithium batteries

INVENTOR(S): Amine, Khalil; Chen, Zonghai; Wang, Qingzheng

PATENT ASSIGNEE(S): The University of Chicago, USA

SOURCE: U.S. Pat. Appl. Publ., 18pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2006199080	A1	20060907	US 2006-366891	200603 01
WO 2006094069	A2	20060908	WO 2006-US7297	200603 01

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA,
 CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
 GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM,
 KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, LY, MA, MD, MG,
 MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT,
 RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT,
 TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU,
 IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR,
 BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD,
 TG, BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,
 ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

PRIORITY APPLN. INFO.: US 2005-657850P P
 200503
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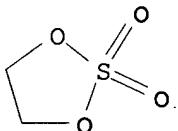
OTHER SOURCE(S): MARPAT 145:317962

AB The present invention is generally related to **electrolytes** containing novel redox shuttles for overcharge protection of lithium-ion batteries. The redox shuttles are capable of thousands hours of overcharge tolerance and have a redox potential at about 3-5.5 V vs.Li and particularly about 4.4-4.8 V vs.Li and particularly about 4.4-4.8 V vs.Li. Accordingly, in one aspect the invention provides **electrolytes** comprising an alkali metal salt; a polar aprotic solvent; and a redox shuttle additive that is an aromatic compound having at least one aromatic ring with four or more

electroneg. substituents, two or more oxygen atoms bonded to the aromatic ring, and no hydrogen atoms bonded to the aromatic ring; and wherein the **electrolyte** solution is substantially nonaq.

Further there are provided electrochem. devices employing the **electrolyte** and methods of making the **electrolyte**.

IT 1072-53-3D, Ethylene sulfate, aryloxy derivative
 RL: MOA (Modifier or additive use); USES (Uses)
 (redox shuttles for overcharge protection of lithium batteries)
 RN 1072-53-3 HCPLUS
 CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



INCL 429326000; 429327000; 429328000; 429329000; 429212000; 429246000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 IT **Battery electrolytes**
 (redox shuttles for overcharge protection of lithium batteries)
 IT 78-19-3, 3,9-Divinyl-2,4,8,10-tetraoxaspiro[5,5]undecane 84-15-1,
 o-Terphenyl 84-15-1D, o-Terphenyl, aryloxy derivative 86-74-8D,
 Carbazole, aryloxy derivative 86-74-8D, Carbazole, aryloxy
 trivinylphosphate derivs. 88-12-0, 1-Vinylpyrrolidin-2-one, uses
 88-14-2D, 2-Furoic acid, aryloxy derivative 91-19-0, Quinoxaline
 91-20-3, Naphthalene, uses 91-22-5, Quinoline, uses 91-22-5D,
 Quinoline, alkoxy derivative 92-52-4, Biphenyl, uses 92-52-4D,
 Biphenyl, methoxy vinyl derivs. 96-49-1D, Ethylene carbonate,
 diaryloxy derivative 96-54-8, n-Methylpyrrole 101-84-8 101-84-8D,
 Diphenyl ether, diaryloxy derivative 102-09-0, Diphenyl carbonate
 102-09-0D, Phenyl carbonate, aryloxy derivative 102-09-0D, Phenyl
 carbonate, diaryloxy derivative 102-71-6, Triethanolamine, uses
 103-29-7, 1,2-Diphenylethane 106-92-3, Allylglycidyl ether
 106-99-0, Butadiene, uses 108-32-7D, Propylene carbonate,
 diaryloxy derivative 109-93-3, Divinyl ether 109-97-7D, Pyrrole,
 alkoxy derivative 109-97-7D, Pyrrole, aryloxy derivative 109-99-9D, Thf,
 aryloxy derivative 110-00-9D, Furan, diaryloxy derivative 110-86-1,
 Pyridine, uses 110-89-4, Piperidine, uses 110-89-4D, Piperidine,
 aryloxy derivative 111-34-2, Butyl vinyl ether 119-65-3,
 Isoquinoline 120-72-9, Indole, uses 120-92-3D, Cyclopentanone,
 aryloxy derivative 140-67-0, 4-Allylanisole 142-96-1D, Butyl ether,
 aryloxy derivative 176-53-4D, Ethylene silicate, aryloxy derivative
 176-53-4D, Ethylene silicate, diaryloxy derivative 287-23-0D,
 Cyclobutane, aryloxy derivative 288-32-4, Imidazole, uses 288-32-4D,
 Imidazole, aryloxy derivative 289-80-5, Pyridazine 289-80-5D,
 Pyridazine, aryloxy derivative 289-95-2, Pyrimidine 290-37-9,
 Pyrazine 290-37-9D, Pyrazine, aryloxy derivative 291-37-2D,
 Cyclotriphosphazene, diaryloxy derivative 503-30-0D, Oxetane, aryloxy
 derivative 614-99-3D, Ethyl-2-furoate, aryloxy derivative 930-22-3
1072-53-3D, Ethylene sulfate, aryloxy derivative
1072-53-3D, Ethylene sulfate, diaryloxy derivative 1118-58-7
 1337-81-1, Vinyl Pyridine 1917-10-8, Vinyl 2-furoate 3724-65-0D,
 Crotonic acid, aryloxy derivative 3741-38-6D, Ethylene sulfite,
 aryloxy derivative 3741-38-6D, Ethylene sulfite, diaryloxy derivative
 4177-16-6, VinylPyrazine 4245-37-8, Vinyl methacrylate
 4370-23-4, 1-Vinylpiperidin-2-one 4427-96-7, Vinyl ethylene
 carbonate 5009-27-8D, Cyclopropanone, 2-aryl derivative 5009-27-8D,

Cyclopropanone, 2-aryloxy derivative 5009-27-8D, Cyclopropanone, aryloxy derivative 6622-92-0, 2,4-Dimethyl-6-hydroxy-pyrimidine 7486-94-4 7570-02-7, Divinyl carbonate 10411-26-4D, Butyl carbonate, diaryloxy derivative 11099-06-2D, Ethyl silicate, diaryloxy derivative 12789-45-6, Methyl phosphate 12789-45-6D, Methyl phosphate, diaryloxy derivative 14265-44-2D, Phosphate, aryloxy derivative 14861-06-4, Vinyl crotonate 15599-91-4D, aryloxy derivs. 15896-04-5 16410-02-9 18358-13-9D, Methacrylate, aryloxy derivative 21994-23-0 23462-75-1, Dihydropyran-3-one 29383-23-1, Vinyl Imidazole 30676-86-9 30851-79-7 31094-36-7 32893-16-6, Methyl vinyl carbonate 33879-62-8, 2-Vinyloxetane 34721-16-9D, Furoate, 2-diaryloxy derivative 35143-18-1 36885-49-1, Vinyl phosphate 37203-76-2, Ethyl phosphate 37275-48-2D, Bipyridine, vinyl methoxy derivs. 41824-21-9D, Crotonate, diaryloxy derivative 44414-27-9 44866-76-4 50337-14-9, 3-Vinylcyclopentanone 51222-11-8 53627-36-4, β -Vinyl- γ -butyrolactone 55849-58-6 61548-40-1 65967-52-4 66166-61-8, 3-Vinylcyclobutanone 66281-01-4 66281-16-1 66956-76-1 72607-84-2 75454-86-3 77208-21-0 80345-98-8 99018-41-4 121712-01-4 139669-84-4 247229-51-2 365458-36-2 557084-91-0 856785-12-1 891828-02-7 891828-03-8 891828-04-9 891828-05-0 891828-06-1 897028-08-9 897028-09-0 897028-10-3 897028-11-4 897028-12-5 897028-13-6 897028-14-7 897028-15-8 897028-16-9 897028-17-0 897028-18-1 897028-19-2 897028-20-5 897028-21-6 897028-22-7 897028-24-9 897028-25-0 897028-26-1 897028-27-2 897028-28-3 897028-28-3D, diaryloxy derivative 897381-27-0 897381-28-1 897381-29-2 897381-31-6 897381-36-1 897381-38-3 897381-40-7 897381-41-8 897381-42-9 897381-43-0 897381-44-1 897381-45-2 897381-46-3 897381-47-4 908587-10-0 908587-13-3 908587-17-7 908587-21-3 908587-22-4 908599-70-2 908599-71-3 908599-72-4 908599-73-5 908599-74-6 908599-75-7 908599-76-8

RL: MOA (Modifier or additive use); USES (Uses)
(redox shuttles for overcharge protection of lithium batteries)

L55 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2006:657261 HCAPLUS
DOCUMENT NUMBER: 145:127575
TITLE: Long life lithium batteries with stabilized electrodes
INVENTOR(S): Amine, Khalil; Liu, Jun; Vissers, Donald R.; Lu, Wenquan
PATENT ASSIGNEE(S): The University of Chicago, USA
SOURCE: U.S. Pat. Appl. Publ., 21 pp., Cont.-in-part of U.S. Ser. No. 857,365.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2006147809	A1	20060706	US 2006-338902	200601 24
US 2005019670	A1	20050127	US 2004-857365	200405 28

PRIORITY APPLN. INFO.: US 2004-857365 A2

200405
28

US 2005-647361P P
200501
26

US 2003-488063P P
200307
17

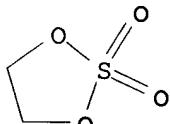
AB The present invention relates to non-aqueous **electrolytes** having electrode stabilizing additives, stabilized electrodes, and electrochem. devices containing the same. Thus the present invention provides **electrolytes** containing an alkali metal salt, a polar aprotic solvent, and an electrode stabilizing additive. In certain **electrolytes**, the alkali metal salt is a bis(chelato)borate and the additives include substituted or unsubstituted linear, branched or cyclic hydrocarbons comprising at least one oxygen atom and at least one aryl, alkenyl or alkynyl group. In other **electrolytes**, the additives include a substituted aryl compound or a substituted or unsubstituted heteroaryl compound wherein the additive comprises at least one oxygen atom. There are also provided methods of making the **electrolytes** and batteries employing the **electrolytes**. The invention also provides for electrode materials. Cathodes of the present invention may be further stabilized by surface coating the particles of the spinel or olivine with a material that can neutralize acid or otherwise lessen or prevent leaching of the manganese or iron ions. In some embodiments the coating is polymeric and in other embodiments the coating is a metal oxide such as ZrO₂, TiO₂, ZnO, WO₃, Al₂O₃, MgO, SiO₂, SnO₂ AlPO₄, Al(OH)₃, a mixture of any two or more thereof.

IT 1072-53-3D, Ethylene sulfate, aryloxy derivs.

RL: MOA (Modifier or additive use); USES (Uses)
(long life lithium batteries with stabilized electrodes)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



INCL 429326000; 429330000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT 84-15-1D, o-Terphenyl, aryloxy derivs. 86-74-8D, Carbazole, aryloxy derivs. 88-12-0, 1-Vinylpyrrolidin-2-one, uses 91-22-5D, Quinoline, aryloxy derivs. 101-84-8, Diphenyl ether 101-84-8D, Diphenyl ether, aryloxy derivs. 102-09-0, Diphenyl carbonate 102-09-0D, Phenyl carbonate, aryloxy derivs. 106-92-3, Allyl glycidyl ether 109-93-3, Divinyl ether 109-97-7D, Pyrrole, aryloxy derivs. 109-99-9D, Tetrahydrofuran, aryloxy derivs. 110-00-9D, Furan, aryloxy derivs. 110-89-4D, Piperidine, aryloxy derivs. 111-34-2, Butyl vinyl ether 120-92-3D, Cyclopentanone, aryloxy derivs. 140-67-0, 4-Allylanisole 142-96-1D, Butyl ether, aryloxy derivs. 176-53-4D, Ethylene silicate, aryloxy derivs.

288-32-4D, Imidazole, aryloxy derivs. 289-80-5D, Pyridazine, aryloxy derivs. 290-37-9D, Pyrazine, aryloxy derivs. 291-37-2D, Cyclotriphosphazene, Vinyl containing derivs. 291-37-2D, Cyclotriphosphazene, aryloxy derivs. 503-30-0D, Oxetane, aryloxy derivs. 614-99-3D, Ethyl-2-furoate, aryloxy derivs. 930-22-3 1072-53-3D, Ethylene sulfate, aryloxy derivs. 1917-10-8, Vinyl-2-furoate 3724-65-0D, Crotonic acid, aryloxy derivs. 3741-38-6D, Ethylene sulfite, aryloxy derivs. 4245-37-8, Vinyl methacrylate 4370-23-4, 1-Vinylpiperidin-2-one 4427-96-7, Vinyl ethylene carbonate 5009-27-8D, Cyclopropanone, aryloxy derivs. 6622-92-0, 2,4-Dimethyl-6-hydroxy-pyrimidine 7570-02-7, DiVinyl carbonate 12789-45-6, Methyl phosphate 14265-44-2D, Phosphate, aryloxy derivs. 14861-06-4, Vinyl crotonate 15896-04-5 16053-89-7D, 2-Furancarboxylate, aryloxy derivs. 16410-02-9 18358-13-9D, Methacrylate, aryloxy derivs. 21994-23-0 23462-75-1, Dihydropyran-3-one 32893-16-6 33879-62-8, 2-Vinyloxetane 36885-49-1, Vinyl phosphate 37203-76-2, Ethyl phosphate 37275-48-2D, Bipyridine, methoxy vinyl derivs. 44414-27-9 50337-14-9, 3-Vinylcyclopentanone 53627-36-4, β -Vinyl- γ -butyrolactone 57453-76-6 61548-40-1 66166-61-8, 3-Vinylcyclobutanone 66281-16-1 66956-76-1 72607-84-2 104531-81-9 117823-03-7 121712-01-4 139669-84-4 557084-91-0 856785-12-1 866947-06-0 897028-07-8 897028-08-9 897028-09-0 897028-10-3 897028-11-4 897028-12-5 897028-13-6 897028-14-7 897028-15-8 897028-16-9 897028-17-0 897028-18-1 897028-19-2 897028-20-5 897028-21-6 897028-22-7 897028-23-8 897028-24-9 897028-25-0 897028-26-1 897028-27-2 897028-28-3 897381-27-0 897381-28-1 897381-29-2 897381-30-5 897381-31-6 897381-32-7 897381-33-8 897381-34-9 897381-35-0 897381-36-1 897381-37-2 897381-38-3 897381-39-4 897381-40-7 897381-41-8 897381-42-9 897381-43-0 897381-44-1 897381-45-2 897381-46-3 897381-47-4

RL: MOA (Modifier or additive use); USES (Uses)
(long life lithium batteries with stabilized electrodes)

L55 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1292320 HCAPLUS

DOCUMENT NUMBER: 144:38333

TITLE: Nonaqueous electrolyte solution for secondary lithium battery

INVENTOR(S): Abe, Koji; Miyoshi, Kazuhiro; Kuwata, Takaaki

PATENT ASSIGNEE(S): Ube Industries, Ltd., Japan

SOURCE: PCT Int. Appl., 45 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005117197	A1	20051208	WO 2005-JP9900	200505 30

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU,

SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA,
 UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
 RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW,
 AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ,
 DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC,
 NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA,
 GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.:

JP 2004-159283

A

200405
28

OTHER SOURCE(S): MARPAT 144:38333

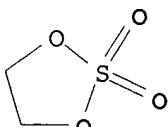
AB The electrolyte solution contains an electrolyte salt in a nonaq. solvent and contains 0.01-10% S acid ester and 0.01-10% triple bond compound of the formula R1(C.tplbond.C)pR2, R3C.tplbond.C(CR4R5)xOY1, Y2O(CR6R7)xC.tplbond.C(CR8R9)xOY3, Y4O(CR10R11)xC.tplbond.CC.tplbond.C(CR12R13)xOY5, R14C.tplbond.C(CR15R16)xOCO2(CR17R18)xC.tplbond.CR19 or R20C.tplbond.C(CR21R22)xOWOY6 where R1 = C1-12 alkyl, C3-6 cycloalkyl, or aryl group; R2-R22 = H or C1-12 alkyl, C3-6 cycloalkyl, or aryl groups, p = 1 or 2, x = 1 or 2; R4 and R5, R6 and R7, R8 and R9, R10 and R11, R12 and R13, R15 and R16, R17 and R18, and R21 and R22 may form C3-6 cycloalkyl groups; W = -SO-, -SO2-, -COCO-; and the Y's are carboxylate ester, alkyl carbonyl, or alkyl sulfonyl groups.

IT 1072-53-3

RL: MOA (Modifier or additive use); USES (Uses)
 (sulfur acid ester and alkyne compound additives in nonaq.
 electrolyte solns. for secondary lithium batteries)

RN 1072-53-3 HCPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-38; H01M004-58; H01M004-66

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte sulfur acid ester
 alkyne compd

IT Battery electrolytes

(sulfur acid ester and alkyne compound additives in nonaq.
 electrolyte solns. for secondary lithium batteries)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 623-53-0, Methyl ethyl carbonate 21324-40-3, Lithium
 hexafluorophosphate

RL: DEV (Device component use); USES (Uses)
 (sulfur acid ester and alkyne compound additives in nonaq.
 electrolyte solns. for secondary lithium batteries)

IT 536-74-3, Phenylacetylene 1072-53-3 1120-71-4,
 Propanesultone 1633-83-6, Butanesultone 1899-25-8 3741-38-6,
 Glycol sulfite 16156-58-4, 2-Propynyl methanesulfonate
 19828-82-1 19828-83-2 29619-56-5 61764-71-4 70886-56-5
 71573-77-8, Di(2-propynyl) oxalate 406725-07-3 530158-20-4
 870861-60-2

RL: MOA (Modifier or additive use); USES (Uses)
 (sulfur acid ester and alkyne compound additives in nonaq.
 electrolyte solns. for secondary lithium batteries)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L55 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1102895 HCAPLUS

DOCUMENT NUMBER: 143:350043

TITLE: Secondary lithium battery with
 electrolyte containing sulfur compound

INVENTOR(S): Minami, Hiroyuki; Sawa, Katsuichiro; Torimae,
 Mariko; Fukui, Atsushi; Kusumoto, Yasuyuki;
 Kamino, Maruo

PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005285563	A2	20051013	JP 2004-97970	200403 30
PRIORITY APPLN. INFO.:			JP 2004-97970	200403 30

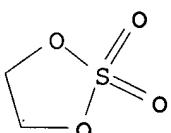
AB The claimed battery is equipped with an anode active mass layer containing Si and/or Si alloys formed on a current collector and a nonaq. electrolyte containing a S compound, e.g., sulfate ester compound. The battery provides long cycle life by preventing cracking of the anode.

IT 1072-53-3

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (secondary lithium battery with electrolyte containing sulfur compound)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M004-02; H01M004-04; H01M004-38; H01M004-62; H01M004-64

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST sulfate ester nonaq electrolyte secondary lithium battery

IT Polyimides, uses

RL: DEV (Device component use); USES (Uses)

(binders, in anodes; secondary lithium battery with electrolyte containing sulfur compound)

IT Secondary batteries
(lithium; secondary lithium battery with electrolyte containing sulfur compound)

IT Battery electrolytes
(secondary lithium battery with electrolyte containing sulfur compound)

IT 7440-21-3, Silicon, uses
RL: DEV (Device component use); USES (Uses)
(anodes; secondary lithium battery with electrolyte containing sulfur compound)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte solvents; secondary lithium battery with electrolyte containing sulfur compound)

IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolytes; secondary lithium battery with electrolyte containing sulfur compound)

IT 1072-53-3
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(secondary lithium battery with electrolyte containing sulfur compound)

L55 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:34100 HCAPLUS

DOCUMENT NUMBER: 142:117674

TITLE: Nonaqueous electrolyte solution and secondary lithium battery

INVENTOR(S): Ogawa, Kazuya; Sano, Atsushi; Iijima, Takeshi; Maruyama, Akira

PATENT ASSIGNEE(S): TDK Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

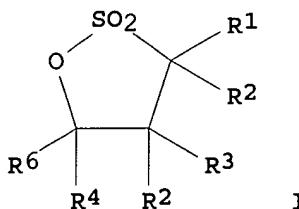
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

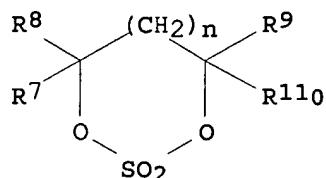
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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-----	-----	-----	-----	-----
JP 2005011768	A2	20050113	JP 2003-177120	200306 20
PRIORITY APPLN. INFO.:			JP 2003-177120	200306 20

OTHER SOURCE(S): MARPAT 142:117674
GI



I



II

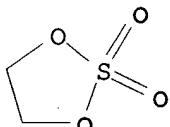
AB The electrolyte solution has a nonaq. solvent mixture and a Li salt, capable of dissolving in the solvent mixture; where the solvent mixture contains propylene carbonate, ethylene sulfide, and a compound I (R1-6 = H or C1-3 hydrocarbon group) or II (R7-10 = H or C1-4 hydrocarbon group). The battery has an insulating separator between a cathode and an anode, and the above electrolyte solution sealed and stored in a battery case.

IT 1072-53-3

RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing dioxothiolane dioxide derivs. in solvents for secondary lithium battery)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery electrolyte solvent
propylene carbonate ethylene sulfide; battery electrolyte
solvent additive dioxothiolane dioxide deriv

IT Battery electrolytes

(electrolyte solns. containing dioxothiolane dioxide
derivs. in solvents for secondary lithium battery)

IT 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
420-12-2, Ethylene sulfide 1072-53-3 7782-42-5,
Graphite, uses 9002-88-4, Polyethylene 21324-40-3, Lithium
hexafluorophosphate 346417-97-8, Cobalt lithium manganese nickel
oxide (Co0.33LiMn0.33Ni0.33O2)

RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing dioxothiolane dioxide
derivs. in solvents for secondary lithium battery)

L55 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:34099 HCAPLUS

DOCUMENT NUMBER: 142:117673

TITLE: Secondary lithium battery

INVENTOR(S): Sano, Atsushi; Ogawa, Kazuya; Iijima, Takeshi;
Maruyama, Akira

PATENT ASSIGNEE(S): TDK Corporation, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.

CODEN: JKXXAF

DOCUMENT TYPE:

Patent

LANGUAGE:

Japanese

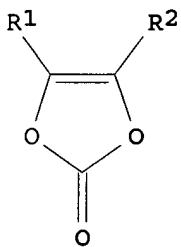
FAMILY ACC. NUM. COUNT:

1

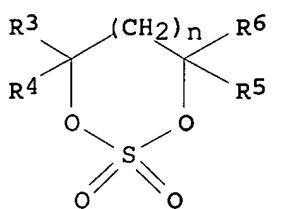
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2005011762	A2	20050113	JP 2003-176955	200306 20
PRIORITY APPLN. INFO.:			JP 2003-176955	200306 20

OTHER SOURCE(S) : MARPAT 142:117673
GI



I



II

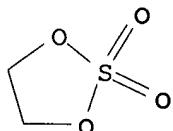
AB The battery has an insulating separator between a cathode and an anode, and a Li salt containing **electrolyte** solution sealed and stored in a battery case; where the nonaq. **solvent** of **electrolyte** solution contains propylene carbonate, ethylene carbonate, and di-Et carbonate; and the **electrolyte** solution contains a 1st compound I (R1, R2 = H or C1-6 hydrocarbon) and a 2nd compound II (R3-6 = H or C1-4 hydrocarbon; and n = 0 or 1).

IT 1072-53-3

RL: MOA (Modifier or additive use); USES (Uses)
(**electrolytes** containing vinylene carbonate and dioxathiolane oxide derivs for secondary lithium batteries)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40

ICS H01M002-02

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery **electrolyte** vinylene carbonate

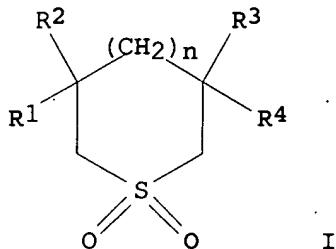
dioxathiolane oxide deriv
 IT Battery electrolytes
 (electrolytes containing vinylene carbonate and
 dioxathiolane oxide derivs for secondary lithium batteries)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 7782-42-5, Graphite, uses
 21324-40-3, Lithium hexafluorophosphate 346417-97-8, Cobalt
 lithium manganese nickel oxide (Co0.33LiMn0.33Ni0.33O2)
 RL: DEV (Device component use); USES (Uses)
 (electrolytes containing vinylene carbonate and
 dioxathiolane oxide derivs for secondary lithium batteries)
 IT 872-36-6, Vinylene carbonate 1072-53-3 1073-05-8
 5689-83-8 124535-97-3
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolytes containing vinylene carbonate and
 dioxathiolane oxide derivs for secondary lithium batteries)

L55 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:139892 HCAPLUS
 DOCUMENT NUMBER: 140:202395
 TITLE: Secondary lithium battery
 INVENTOR(S): Sano, Atsushi; Iijima, Takeshi; Maruyama, Akira
 PATENT ASSIGNEE(S): TDK Corporation, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 32 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004055502	A2	20040219	JP 2002-233801	200208 09
CN 1411092	A	20030416	CN 2002-143605	200209 20
US 2003113636	A1	20030619	US 2002-247511	200209 20
PRIORITY APPLN. INFO.:			JP 2001-289294	A 200109 21
			JP 2001-343261	A 200111 08
			JP 2002-159417	A 200205 31
			JP 2001-299654	A 200109 28
			JP 2002-233801	A 200208

OTHER SOURCE(S) :
GI

MARPAT 140:202395

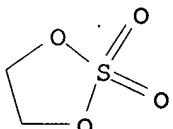


AB The battery has a Li-intercalating cathode, an Li-intercalating anode, and a Li⁺-conductive material; where (a) the conductive material contains a compound I (R1-4 = H or C1-5 alkyl group; n = 0 or 1); (b) the anode contains a compound having -CO₂H or -OH group and the conductive material contains propylene carbonate; or (c) the cathode active mass is a Li containing transition metal oxide, the anode active mass is a carbonaceous material, and the conductive material as nonaq. electrolyte solution contains a linear carbonate as a low viscosity solvent in a solvent mixture of propylene carbonate and ethylene carbonate.

IT 1072-53-3, 1,3,2-Dioxathiolane-2,2-dioxide
RL: DEV (Device component use); USES (Uses)
(compns. of secondary lithium batteries for improved charge-discharge cycle efficiency)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM H01M010-40
ICS H01M004-02; H01M004-58; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary lithium battery compn **electrolyte** dioxathiolane compd

IT Secondary batteries
(lithium; compns. of secondary lithium batteries containing dioxathiolane compds. in **electrolyte** solns. for improved charge-discharge cycle efficiency)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 127-09-3, Sodium acetate 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl carbonate 1072-53-3, 1,3,2-Dioxathiolane-2,2-dioxide 2923-18-4, Sodium trifluoroacetate 5689-83-8 7446-81-3, Sodium acrylate 9002-89-5, Polyvinyl alcohol 9004-67-5, Methyl cellulose 9005-38-3, Sodium alginate 21324-40-3, Lithium hexafluorophosphate 124535-97-3 165108-64-5 346417-97-8, Cobalt lithium manganese

nickel oxide (Co0.33LiMn0.33Ni0.33O2)
 RL: DEV (Device component use); USES (Uses)
 (compns. of secondary lithium batteries for improved
 charge-discharge cycle efficiency)

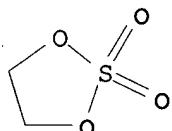
L55 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:528004 HCAPLUS
 DOCUMENT NUMBER: 138:15179
 TITLE: Theoretical studies of the **solvent**
 decomposition by lithium atoms in lithium-ion
 battery **electrolyte**
 AUTHOR(S): Han, Young-Kyu; Lee, Sang Uck; Ok, Jong-Hoa;
 Cho, Jeong-Ju; Kim, Hyeong-Jin
 CORPORATE SOURCE: Analytic and Computational Science Centre, LG
 Chem, Ltd., Taejon, 305-380, S. Korea
 SOURCE: Chemical Physics Letters (2002), 360(3,4),
 359-366
 CODEN: CHPLBC; ISSN: 0009-2614
 PUBLISHER: Elsevier Science B.V.
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB We have carried out d. functional and ab initio calcns. on the
 structure and stability of M-Lin (n=0, 1, and 2) complexes, where
 the M=ethylene carbonate (EC), propylene carbonate (PC), vinylene
 carbonate (VC), ethylene sulfite (ES), and glycol sulfate (GS).
 Although the mols. are geometrically similar the reactions with
 lithium atoms may provide various reaction products depending on the
 structures and stabilities. Reductive decomposition by lithium atoms
 appears to be in order of the most energetically favorable,
 ES.apprx.GS>EC.apprx.PC>VC, and GS>PC.apprx.EC.apprx.VC>ES for the
 first and second lithium atom addition reactions to the mols., resp.
 The transition states are also determined and discussed for EC, VC, and
 ES.

IT 1072-53-3
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (theor. studies of the **solvent** decomposition by lithium
 atoms in lithium-ion battery **electrolyte**)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery **electrolyte solvent** decompn lithium

atoms

IT Battery **electrolytes**
 (theor. studies of the **solvent** decomposition by lithium
 atoms in lithium-ion battery **electrolyte**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 872-36-6, Vinylene carbonate 1072-53-3 3741-38-6,
 Ethylene sulfite 7439-93-2, Lithium, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)

(theor. studies of the **solvent** decomposition by lithium atoms in lithium-ion battery **electrolyte**)

REFERENCE COUNT: 31 THERE ARE 31 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L55 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1998:466299 HCAPLUS

DOCUMENT NUMBER: 129:97750

TITLE: **Electrolyte** solutions containing cyclic sulfate esters for secondary lithium batteries

INVENTOR(S): Shima, Kunihisa; Akawa, Shigeki; Mori, Shoichiro

PATENT ASSIGNEE(S): Mitsubishi Chemical Industries Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

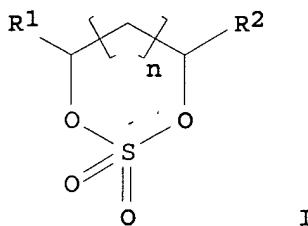
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10189042	A2	19980721	JP 1996-345217	199612 25
JP 3760540	B2	20060329	JP 1996-345217	199612 25
PRIORITY APPLN. INFO.:				

OTHER SOURCE(S): MARPAT 129:97750
GI



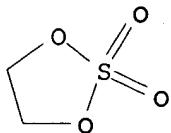
AB The **electrolyte** solns. contain a Li salt, an organic solvent for the salt, and 0.1-50% cyclic sulfate ester I, where R1 and R2 are H or C1-2 alkyl group, and n = 0 or 1.

IT 1072-53-3

RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. containing cyclic sulfate esters for secondary lithium batteries)

RN 1072-53-3 HCAPLUS

CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



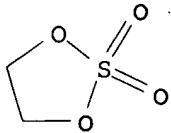
IC ICM H01M010-40
 ICS C07D327-10
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery electrolyte cyclic sulfate ester
 IT Battery electrolytes
 (electrolyte solns. containing cyclic sulfate esters for
 secondary lithium batteries)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate
 1072-53-3 4426-50-0 7664-93-9D, Sulfuric acid, esters,
 cyclic esters, uses 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing cyclic sulfate esters for
 secondary lithium batteries)

L55 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1994:119381 HCAPLUS
 DOCUMENT NUMBER: 120:119381
 TITLE: Electrocatalytic oxidation method for the
 production of cyclic sulfates and sulfamides
 INVENTOR(S): Gao, Yun; Zepp, Charles M.
 PATENT ASSIGNEE(S): Separacor, Inc., USA
 SOURCE: U.S., 7 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 5271812	A	19931221	US 1991-717432	199106 19
PRIORITY APPLN. INFO.:			US 1991-717432	199106 19

OTHER SOURCE(S): MARPAT 120:119381
 AB The cyclic sulfates and sulfamides are produced from the
 corresponding cyclic sulfite and cyclic sulfamidite substrates,
 resp. The method involves the electrolysis of a
 solvent mixture containing active metal species, nonmetal oxidant
 species, and substrate.
 IT 1072-53-3P, Ethylene sulfate
 RL: PREP (Preparation)
 (production of, electrocatalytic oxidation method for)
 RN 1072-53-3 HCAPLUS
 CN 1,3,2-Dioxathiolane, 2,2-dioxide (9CI) (CA INDEX NAME)



IC ICM C25B003-00
 INCL 204-59R
 CC 72-4 (Electrochemistry)
 Section cross-reference(s): 28
 IT 1072-53-3P, Ethylene sulfate 1073-05-8P 4440-89-5P
 6970-90-7P 52393-63-2P 63082-73-5P 117470-91-4P 127854-44-8P
 152918-93-9P 152918-95-1P 152918-96-2P 152985-13-2P
 RL: PREP (Preparation)
 (production of, electrocatalytic oxidation method for)

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L56 ANSWER 1 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:394066 HCAPLUS
 DOCUMENT NUMBER: 142:433099
 TITLE: Electrolyte for rechargeable lithium
 battery
 INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Eur. Pat. Appl., 50 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1528616	A2	20050504	EP 2004-90417	200411 01
KR 2005041859	A	20050504	KR 2004-65773	200408 20
JP 2005142157	A2	20050602	JP 2004-318586	200411 01
US 2005142448	A1	20050630	US 2004-980116	200411 01
CN 1770541	A	20060510	CN 2004-10104744	200411 01

PRIORITY APPLN. INFO.:

KR 2003-76913

A

200310
31<--
KR 2004-65773

A

200408
20

OTHER SOURCE(S): MARPAT 142:433099

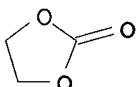
AB Disclosed is an **electrolyte** for a rechargeable lithium battery including: a first additive having an oxidation potential of 4.1 to 4.6 V; a second additive having an oxidation potential of 4.4 to 5.0 V; and a nonaq. organic **solvent**; and a lithium salt.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 108-90-7, Chlorobenzene, uses 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate 25496-08-6, Fluorotoluene 27359-10-0, Trifluorotoluene

RL: DEV (Device component use); USES (Uses)
(electrolyte for rechargeable lithium battery)

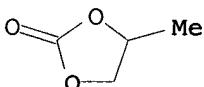
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



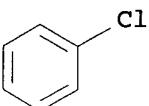
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



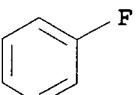
RN 108-90-7 HCAPLUS

CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



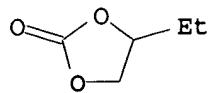
RN 462-06-6 HCAPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



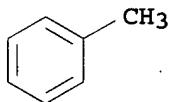
RN 25496-08-6 HCAPLUS
 CN Benzene, fluoromethyl- (9CI) (CA INDEX NAME)



D1-F

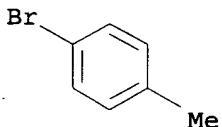
D1-Me

RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)

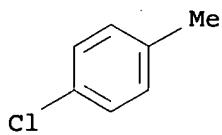


3 (D1-F)

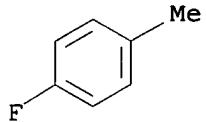
IT 106-38-7, 4-Bromotoluene 106-43-4, 4-Chlorotoluene
 352-32-9, 4-Fluorotoluene
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 RN 106-38-7 HCAPLUS
 CN Benzene, 1-bromo-4-methyl- (9CI) (CA INDEX NAME)



RN 106-43-4 HCAPLUS
 CN Benzene, 1-chloro-4-methyl- (9CI) (CA INDEX NAME)



RN 352-32-9 HCAPLUS
 CN Benzene, 1-fluoro-4-methyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST electrolyte rechargeable lithium battery
 IT Alkenes, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (C2-8, copolymer with propylene; electrolyte for
 rechargeable lithium battery)
 IT Battery electrolytes
 (electrolyte for rechargeable lithium battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT Styrene-butadiene rubber, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT Secondary batteries
 (lithium; electrolyte for rechargeable lithium battery)
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate
 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 108-88-3, Toluene, uses
 108-90-7, Chlorobenzene, uses 462-06-6,
 Fluorobenzene 463-79-6D, Carbonic acid, ester
 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses
 7440-44-0, Carbon, uses 7447-41-8, Lithium chloride, uses
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 12190-79-3, Cobalt lithium oxide (CoLiO₂) 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 25496-08-6, Fluorotoluene
 27359-10-0, Trifluorotoluene 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
 Ethyl propyl carbonate 37220-89-6, Aluminum lithium oxide

56525-42-9, Methyl propyl carbonate 90076-65-6 132843-44-8
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT 79-41-4D, Methacrylic acid, copolymer with methacrylic alkyl ester 80-05-7, Bisphenol A, uses 80-09-1, Bisphenol S 106-38-7, 4-Bromotoluene 106-43-4, 4-Chlorotoluene 115-07-1D, Propylene, copolymer with C2-8 olefin 352-32-9, 4-Fluorotoluene 530-48-3, 1,1-Diphenyl ethylene 772-00-9, 4-Phenyl-1,3-dioxane 843-55-0, 4,4'-Cyclohexylidene bisphenol 1075-20-3, 4-Phenyl-1,3-dioxolane 1478-61-1, 4,4'- (Hexafluoroisopropylidene)diphenol 9000-11-7 9003-39-8, Polyvinylpyrrolidone 9004-34-6D, Cellulose, compds. 9004-57-3, Ethyl cellulose 9004-62-0 9004-64-2, Hydroxypropyl cellulose 9004-65-3, Hydroxypropyl methyl cellulose 9004-67-5, Methyl cellulose 9062-14-0, Ethyl hydroxypropyl cellulose 10192-62-8, Bisphenol A diacetate 24937-79-9, PVDF 25549-84-2, Polysodium acrylate
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT 9003-55-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; electrolyte for rechargeable lithium battery)

L56 ANSWER 2 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

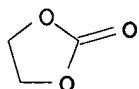
ACCESSION NUMBER: 2005:259463 HCAPLUS
 DOCUMENT NUMBER: 142:319870
 TITLE: **Electrolyte for lithium battery**
 INVENTOR(S): Lim, Hyun-Jeong; Song, Eui-Hwan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2005064294	A1	20050324	US 2004-944886	200409 21
KR 2005029778	A	20050328	KR 2003-65550	200309 22
PRIORITY APPLN. INFO.:				
KR 2003-65550 A 200309 22				

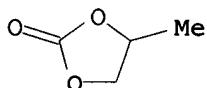
OTHER SOURCE(S): MARPAT 142:319870

AB An electrolyte for a lithium battery includes a nonaq. organic solvent, lithium salts, and an additive such as a 4-substituted imidazole where the substituent is selected from the group consisting of an alkyl, an alkoxy, a halogen, and an electron withdrawing group. The lithium battery having the electrolyte shows improved electrochem. properties, such as capacity at high rate and safety characteristics compared to a battery including the conventional nonaq. electrolyte

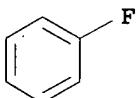
which does not include the additive compound
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 462-06-6, Fluorobenzene 4437-85-8,
 Butylene carbonate 25496-08-6, Fluorotoluene
 27359-10-0, TriFluorotoluene
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



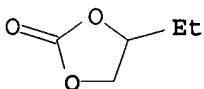
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



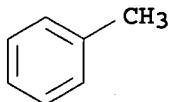
RN 25496-08-6 HCAPLUS
 CN Benzene, fluoromethyl- (9CI) (CA INDEX NAME)



D1-F

D1-Me

RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

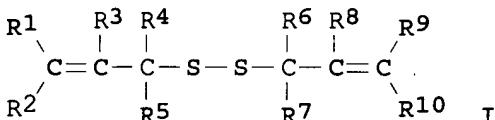
IC ICM H01M010-40
 INCL 429328000; 429200000; 429332000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST electrolyte additive lithium battery imidazole; safety
 lithium battery
 IT Battery electrolytes
 (electrolyte for lithium battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)
 IT Secondary batteries
 (lithium; electrolyte for lithium battery)
 IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 108-88-3, Toluene, uses 462-06-6, Fluorobenzene
 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl
 carbonate 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl
 carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene
 carbonate 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride,
 uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium
 hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate
 25496-08-6, Fluorotoluene 27359-10-0,
 TriFluorotoluene 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate
 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)
 IT 3034-38-6, 4-Nitroimidazole 15965-31-8, 4-Chloroimidazole
 18502-05-1, 4-Cyanomethylimidazole
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium battery)

L56 ANSWER 3 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2005:1959 HCAPLUS
 DOCUMENT NUMBER: 142:97467
 TITLE: Nonaqueous electrolyte for a lithium
 secondary battery
 INVENTOR(S): Kim, Jin-sung

PATENT ASSIGNEE(S) : Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004265702	A1	20041230	US 2004-869437	200406 17
US 7060392	B2	20060613		<--
KR 2005004929	A	20050113	KR 2003-42557	200306 27
JP 2005019409	A2	20050120	JP 2004-187941	200406 25
CN 1585186	A	20050223	CN 2004-10064039	200406 28
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PRIORITY APPLN. INFO.:			KR 2003-42557	A 200306 27
<--				

OTHER SOURCE(S) : MARPAT 142:97467
 GI

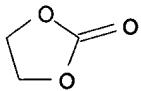


AB An electrolyte for a lithium secondary battery comprises lithium salts, a nonaq. organic solvent, and an additive compound of formula (I); where R1 to R10 are independently selected from the group consisting of a hydrogen, alkyl, alkenyl, and alkynyl. The additive compound decomp. earlier than organic solvent to form an SEI film, and prevents decomposition of the organic solvent.

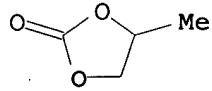
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)

RN 96-49-1 HCAPLUS

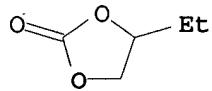
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



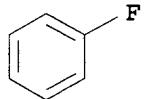
RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



IT 462-06-6, Fluorobenzene 25496-08-6, Fluorotoluene
 27359-10-0, Trifluorotoluene
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



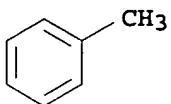
RN 25496-08-6 HCAPLUS
 CN Benzene, fluoromethyl- (9CI) (CA INDEX NAME)



D1-F

D1-Me

RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M010-40
 INCL 429340000; X42-932.6; X42-934.2
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium secondary battery nonaq **electrolyte**
 IT Secondary batteries
 (lithium; nonaq. **electrolyte** for lithium secondary
 battery)
 IT Battery **electrolytes**
 (nonaq. **electrolyte** for lithium secondary battery)
 IT Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)
 IT Aromatic hydrocarbons, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 463-79-6D, Carbonic acid,
 ester 616-38-6, Dimethyl carbonate 623-53-0, Methyl
 ethyl carbonate 623-96-1, Dipropyl carbonate 4437-85-8,
 Butylene carbonate 7447-41-8, Lithium chloride, uses 10377-51-2,
 Lithium iodide 12190-79-3, Cobalt lithium oxide (CoLiO₂)
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium
 triflate 35363-40-7, Ethyl propyl carbonate 37220-89-6, Aluminum
 lithium oxide 56525-42-9, Methyl propyl carbonate 131651-65-5
 RL: DEV (Device component use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)
 IT 71-43-2, Benzene, uses 108-88-3, Toluene, uses 462-06-6,
 Fluorobenzene 1330-20-7, Xylene, uses 2179-57-9, Allyl disulfide
 2179-58-0, Methyl Allyl disulfide 25496-08-6,
 Fluorotoluene 27359-10-0, Trifluorotoluene 72437-63-9
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L56 ANSWER 4 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:1005148 HCAPLUS
 DOCUMENT NUMBER: 142:243585
 TITLE: Lithium battery with improved high temperature
 shelf life and its manufacture
 INVENTOR(S): Song, Ui Hwan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
 CODEN: KRXXA7

DOCUMENT TYPE: Patent
 LANGUAGE: Korean
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2003034735	A	20030509	KR 2001-66454	200110 26

PRIORITY APPLN. INFO.: KR 2001-66454 200110
26

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AB The battery uses a polymer **electrolyte** containing a Li salt and an organic **solvent**, where the polymer is a polymer of $\text{CH}_2:\text{C}(\text{R}1)\text{CO}_2(\text{CH}_2\text{CH}_2\text{O})_x\text{COC}(\text{R}2):\text{CH}_2$ (x = an integer of 2-5, R1 and R2 are independently H or Me) or I ($a = 2$, $b = 4$), and the organic **solvent** contains 20-70 wt% ethylene carbonate and 30-80 wt% of a **carbonate based solvent**, $b \geq 120^\circ$. The **organic solvent** may also contain a fluorinated aromatic hydrocarbon compound

IT 96-49-1, 1,3-Dioxolan-2-one

RL: DEV (Device component use); USES (Uses)
 (compns. of polymer **electrolytes** containing lithium salt and carbonate **ester solvents** for lithium batteries)

RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

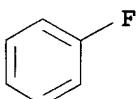


IT 462-06-6, Fluorobenzene

RL: MOA (Modifier or additive use); USES (Uses)
 (compns. of polymer **electrolytes** containing lithium salt and carbonate **ester solvents** for lithium batteries)

RN 462-06-6 HCPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery PEO acrylate polymer **electrolyte** carbonate org **solvent**; fluorinated hydrocarbon **solvent**

lithium battery acrylate polymer **electrolyte**

IT Battery **electrolytes**

(compns. of polymer **electrolytes** containing lithium salt

and carbonate ester solvents for lithium batteries)

IT 96-49-1, 1,3-Dioxolan-2-one

RL: DEV (Device component use); USES (Uses)
(compns. of polymer electrolytes containing lithium salt and carbonate ester solvents for lithium batteries)

IT 96-48-0 105-58-8 462-06-6, Fluorobenzene 93365-34-5

RL: MOA (Modifier or additive use); USES (Uses)
(compns. of polymer electrolytes containing lithium salt and carbonate ester solvents for lithium batteries)

L56 ANSWER 5 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:999582 HCAPLUS

DOCUMENT NUMBER: 141:426305

TITLE: Nonaqueous electrolyte for a lithium secondary battery

INVENTOR(S): Noh, Hyung-Gon

PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 13 pp.

CODEN: USXXCO

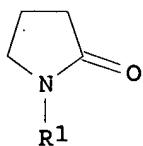
DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004229128	A1	20041118	US 2004-834668	200404 28
KR 2004098164	A	20041120	KR 2003-30380	200305 13
JP 2004342585	A2	20041202	JP 2004-17904	200401 27
CN 1551401	A	20041201	CN 2004-10045142	200404 28
PRIORITY APPLN. INFO.:			KR 2003-30380	A 200305 13
OTHER SOURCE(S): GI			<--	
			MARPAT 141:426305	

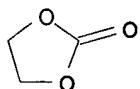


AB Disclosed is an **electrolyte** of a lithium secondary battery comprising a lithium salt, an organic **solvent**, and at least one additive compound selected from the group consisting of compds. represented by the formula (I) and derivs. thereof: where R1 is selected from the group consisting of hydrogen radicals, alkyls aryls, cycloalkyls, alkenyls, alkynyls, ester radicals, and aliphatic carbonate radicals. The **electrolyte** improves both swelling inhibition properties at high temperature and capacity characteristics of a lithium secondary battery.

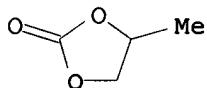
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate 27359-10-0, Trifluorotoluene
RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** for lithium secondary battery)

RN 96-49-1 HCAPLUS

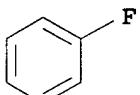
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



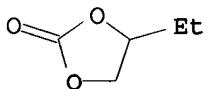
RN 108-32-7 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



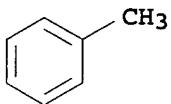
RN 462-06-6 HCAPLUS
CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)

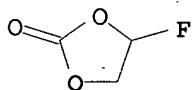


RN 27359-10-0 HCAPLUS
CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IT 114435-02-8, Fluoroethylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 RN 114435-02-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M004-52; H01M004-50; H01M004-58
 INCL 429328000; X42-933.0; X42-923.11; X42-922.3; X42-922.4; X42-923.195
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST electrolyte nonaq lithium secondary battery
 IT Swelling, physical
 (inhibition; nonaq. electrolyte for lithium secondary
 battery)
 IT Secondary batteries
 (lithium; nonaq. electrolyte for lithium secondary
 battery)
 IT Battery electrolytes
 (nonaq. electrolyte for lithium secondary battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 108-88-3, Toluene, uses 462-06-6, Fluorobenzene
 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl
 carbonate 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl
 carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene
 carbonate 7791-03-9, Lithium perchlorate 12355-58-7
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 27359-10-0,
 Trifluorotoluene 29935-35-1, Lithium hexafluoroarsenate
 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate
 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5,
 Lithium nonafluorobutanesulfonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 IT 88-12-0, 1Vinyl-2-pyrrolidone, uses 872-36-6, Vinylene carbonate

872-36-6D, Vinylene carbonate, derivative 872-50-4,
 1-Methyl-2-pyrrolidone, uses 2687-91-4, 1-Ethyl-2-pyrrolidone
 4641-57-0, 1-Phenyl-2-pyrrolidone 7439-93-2, Lithium, uses
 12190-79-3, Cobalt lithium oxide (CoLiO₂) 114435-02-8,
 Fluoroethylene carbonate 162684-16-4, Lithium manganese nickel
 oxide

RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)

L56 ANSWER 6 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:978247 HCAPLUS

DOCUMENT NUMBER: 142:222534

TITLE: High efficiency secondary lithium battery with
 improved low temperature properties and its
 manufacture

INVENTOR(S): Song, Ui Hwan

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given

CODEN: KRXXA7

DOCUMENT TYPE: Patent

LANGUAGE: Korean

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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KR 2003034736	A	20030509	KR 2001-66455	200110 26

PRIORITY APPLN. INFO.:		KR 2001-66455		
		200110 26		

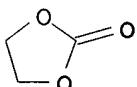
AB The battery uses a polymer **electrolyte** containing a polymer of
 $\text{CH}_2:\text{CR}_1\text{CO}_2(\text{CH}_2\text{CH}_2\text{O})_x\text{COCR}_2:\text{CH}_2$ ($x = 2-5$, R_1 and $\text{R}_2 = \text{H}$ or Me) or I
 $(a = 2, b = 4)$, a Li salt, and an organic **solvent** containing 5-40%
 ethylene carbonate and 5-20% propylene carbonate.

IT 96-49-1, 1,3-Dioxolan-2-one 108-32-7

RL: DEV (Device component use); USES (Uses)
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)

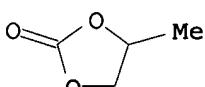
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

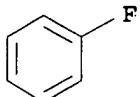


RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 462-06-6, Fluorobenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)
 RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery **electrolyte** polyethylene oxide
 acrylate; polyacrylate **ester** **electrolyte**
 secondary lithium battery
 IT Battery **electrolytes**
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)
 IT Polyoxyalkylenes, uses
 RL: DEV (Device component use); USES (Uses)
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)
 IT 96-49-1, 1,3-Dioxolan-2-one 108-32-7 9051-34-7
 21324-40-3, Lithium hexafluorophosphate 25322-68-3D, Poly(ethylene
 oxide), (meth)acrylate **esters**, homopolymers 57636-10-9
 RL: DEV (Device component use); USES (Uses)
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)
 IT 462-06-6, Fluorobenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (compns. of polymer **electrolytes** containing acrylic
 polymers for secondary lithium batteries)

L56 ANSWER 7 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:905474 HCPLUS
 DOCUMENT NUMBER: 141:382160
 TITLE: **Electrolyte** for rechargeable lithium
 battery
 INVENTOR(S): Noh, Hyung-gon; Song, Eui-hwan
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 9 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	----	-----	-----	-----
US 2004214092	A1	20041028	US 2004-834818	200404 28
<--				
KR 2004095852	A	20041116	KR 2003-26845	

CN 1543006

A

20041103

CN 2004-10045141

200304
28200404
28

JP 2004327444

A2

20041118

JP 2004-133602

200404
28

PRIORITY APPLN. INFO.:

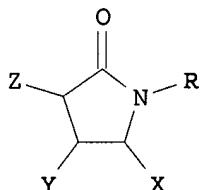
KR 2003-26845

A

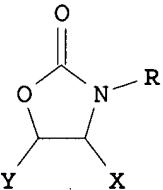
200304
28OTHER SOURCE(S) :
GI

MARPAT 141:382160

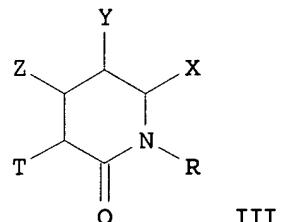
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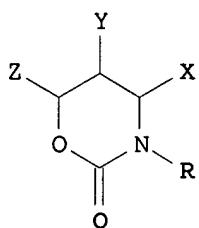
I



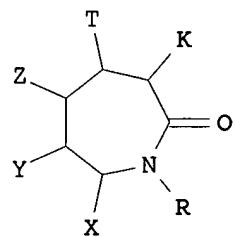
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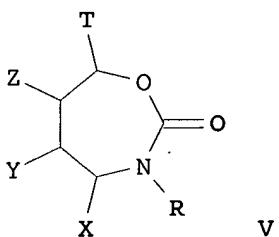
III



IV



V



VI

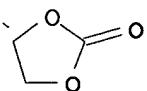
AB Disclosed is an **electrolyte** for a rechargeable lithium battery including a nonaq. organic **solvent**, a lithium salt, and a lactam-based compound selected from the group consisting of compds. represented by formulas (I), (II), (III), (IV), (V). and (VI): where R is a H radical, a C 2-6 alkenyl or a halogen radical; and K, T, X, Y and Z are identically or independently H radicals or halogen radicals.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate

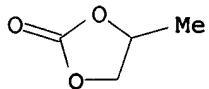
RL: DEV (Device component use); USES (Uses)
(electrolyte for rechargeable lithium battery)

RN 96-49-1 HCPLUS

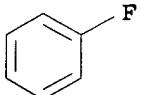
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



IT 462-06-6, Fluorobenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



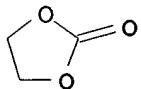
IC ICM H01M010-40
 INCL 429328000; 429336000; 429339000; 429231800; 429330000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST electrolyte lactam based compd rechargeable lithium
 battery
 IT Battery electrolytes
 (electrolyte for rechargeable lithium battery)
 IT Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT Secondary batteries
 (lithium; electrolyte for rechargeable lithium battery)
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 463-79-6D, Carbonic acid, cyclic esters
 623-53-0, Ethyl methyl carbonate 7440-44-0, Carbon, uses
 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate
 12190-79-3, Cobalt lithium oxide (CoLiO₂) 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 trifluoromethanesulfonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for rechargeable lithium battery)
 IT 71-43-2D, Benzene, halogenated 462-06-6, Fluorobenzene
 2235-00-9, N-Vinylcaprolactam
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for rechargeable lithium battery)

L56 ANSWER 8 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:905473 HCPLUS
 DOCUMENT NUMBER: 141:382159

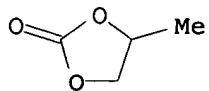
TITLE: Nonaqueous electrolyte for a lithium
 battery
 INVENTOR(S): Lim, Hyun-Jeong; Song, Eui-Hwan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 17 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004214091	A1	20041028	US 2004-819268	200404 07
KR 2004095853	A	20041116	KR 2003-26846	200304 28
CN 1543005	A	20041103	CN 2004-10031876	200403 30
JP 2004327445	A2	20041118	JP 2004-133883	200404 28
PRIORITY APPLN. INFO.:				KR 2003-26846 A 200304 28

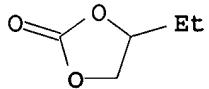
OTHER SOURCE(S): MARPAT 141:382159
 AB An electrolyte of a lithium battery includes a nonaq. organic solvent, a lithium salt, and a compound additive such as a sulfone-based compound, a carbonate-based compound, and a sulfoxide compound that substantially include aromatic hydrocarbon groups. The lithium battery utilizing the electrolyte of the present invention has improved electrochem. properties such as capacity at a high rate and safety of the battery during overcharge.
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium battery)
 RN 96-49-1 HCPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



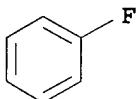
RN 108-32-7 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



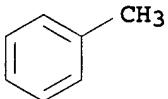
RN 4437-85-8 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



IT 462-06-6, Fluorobenzene 27359-10-0,
 Trifluorotoluene
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium battery)
 RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 27359-10-0 HCPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M010-40
 INCL 429326000; 429340000; 429343000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery nonaq **electrolyte**; safety lithium battery
 nonaq **electrolyte**
 IT Secondary batteries
 (lithium; nonaq. **electrolyte** for lithium battery)
 IT Battery **electrolytes**
 (nonaq. **electrolyte** for lithium battery)
 IT Esters, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (nonaq. **electrolyte** for lithium battery)
 IT Aromatic hydrocarbons, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium battery)
 IT Safety

(overcharge; nonaq. electrolyte for lithium battery)

IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium battery)

IT 60-29-7, Ether, uses 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 463-79-6D, Carbonic acid, chain ester 463-79-6D,
 Carbonic acid, cyclic ester 463-79-6D, Carbonic acid,
 ester 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
 methyl carbonate 623-96-1, Dipropyl carbonate 4437-85-8,
 Butylene carbonate 7439-93-2, Lithium, uses 7447-41-8, Lithium
 chloride, uses 10377-51-2, Lithium iodide 12355-58-7
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 35363-40-7, Ethyl propyl
 carbonate 56525-42-9, Methyl propyl carbonate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium battery)

IT 71-43-2, Benzene, uses 80-00-2, 4-Chlorophenyl phenyl sulfone
 108-88-3, Toluene, uses 120-51-4, Benzyl benzoate 383-29-9,
 Bis(4-fluorophenyl)sulfone 462-06-6, Fluorobenzene
 599-70-2, Ethyl phenyl sulfone 621-08-9, Dibenzyl sulfoxide
 1330-20-7, Xylene, uses 2449-35-6 3112-85-4, Methyl phenyl
 sulfone 3406-02-8, Bisphenyl sulfonyl methane 27359-10-0
 , Trifluorotoluene
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium battery)

L56 ANSWER 9 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:796490 HCAPLUS
 DOCUMENT NUMBER: 141:263480
 TITLE: A nonaqueous electrolyte for a lithium
 secondary battery
 INVENTOR(S): Noh, Hyeong-Gon; Jung, Cheol-Soo; Song, Eui-Hwan
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Eur. Pat. Appl., 25 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1463143	A2	20040929	EP 2003-90265	200308 21
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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004083670	A	20041006	KR 2003-18226	200303 24
JP 2005108440	A2	20050421	JP 2003-183257	200306 26
				<--
CN 1532986	A	20040929	CN 2003-155677	

200309
02

US 2004197667

A1 20041007

US 2003-653192

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200309
03

A 200303
24

PRIORITY APPLN. INFO.:

KR 2003-18226

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OTHER SOURCE(S): MARPAT 141:263480

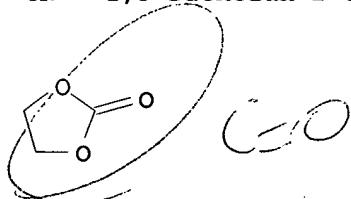
AB An **electrolyte** of a lithium secondary battery includes lithium salts, an organic **solvent** with a high b.p., and a carbonate-based additive compound having substituents selected from the group consisting of a halogen, a CN, and a NO₂. The **electrolyte** improves discharge, low temperature, and cycle life characteristics of a lithium secondary battery.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate 25496-08-6, Fluorotoluene 27359-10-0, TriFluorotoluene

RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** for lithium secondary battery)

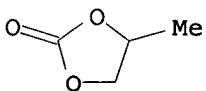
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



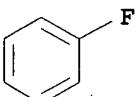
RN 108-32-7 HCPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



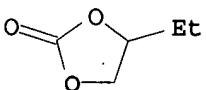
RN 462-06-6 HCPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCPLUS

CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



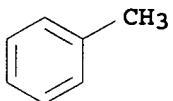
RN 25496-08-6 HCPLUS
 CN Benzene, fluoromethyl- (9CI) (CA INDEX NAME)



D1-F

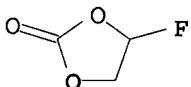
D1-Me

RN 27359-10-0 HCPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IT 114435-02-8, Fluoroethylene carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 RN 114435-02-8 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-fluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST nonaq electrolyte lithium secondary battery
 IT Secondary batteries
 (lithium; nonaq. electrolyte for lithium secondary
 battery)
 IT Battery electrolytes
 (nonaq. electrolyte for lithium secondary battery)
 IT Anhydrides
 Aromatic hydrocarbons, uses
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 IT Fluoropolymers, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 IT Styrene-butadiene rubber, uses

IT RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 67-68-5, Dmso, uses 68-12-2, Dmf, uses 71-43-2, Benzene, uses
 75-05-8, Acetonitrile, uses 79-16-3, N-Methylacetamide 96-48-0,
 γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 108-88-3, Toluene, uses 123-39-7, n-Methylformamide 126-33-0,
 Sulfolane 462-06-6, Fluorobenzene 616-38-6, Dimethyl
 carbonate 616-42-2, Dimethyl sulfite 623-53-0, Methyl ethyl
 carbonate 623-96-1, Dipropyl carbonate 872-50-4,
 N-Methylpyrrolidone, uses 1330-20-7, Xylene, uses
 4437-85-8, Butylene carbonate 7447-41-8, Lithium chloride,
 uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate
 10377-51-2, Lithium iodide 12003-67-7 14024-11-4, Lithium
 tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
 hexafluorophosphate 25496-08-6, Fluorotoluene
 27359-10-0, TriFluorotoluene 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
 Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate
 90076-65-6 131651-65-5 162684-16-4, Lithium manganese nickel
 oxide

IT RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone 80-05-7, uses
 104-92-7, 4-Bromoanisole 127-63-9, Phenyl sulfone 452-10-8,
 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9,
 4-Fluoroanisole 463-79-6D, Carbonic acid, cyclic ester
 620-32-6, Benzyl sulfone 623-12-1, 4-Chloroanisole 1073-05-8,
 1,3-Propanediol cyclic sulfate 1120-71-4, Propane sultone
 1888-91-1, n-Acetylcaprolactam 1889-59-4, Ethyl vinyl sulfone
 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole 3680-02-2,
 Methyl vinyl sulfone 5535-48-8, Phenyl vinyl sulfone 24937-79-9,
 Pvdf 28452-93-9, Butadiene sulfone 28802-49-5, Dimethylfuran
 93343-10-3, 3,5-Difluoroanisole 114435-02-8,
 Fluoroethylene carbonate 202925-08-4, 3-Chloro-5-fluoroanisole
 756901-22-1 756901-23-2

IT RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 9003-55-8

IT RL: MOA (Modifier or additive use); USES (Uses)
 (styrene-butadiene rubber; nonaq. electrolyte for
 lithium secondary battery)

L56 ANSWER 10 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:753254 HCPLUS
 DOCUMENT NUMBER: 141:228183
 TITLE: A nonaqueous electrolyte for lithium
 secondary battery
 INVENTOR(S): Kim, Jin-Hee; Kim, Jin-Sung; Hwang, Sang-Moon;
 Paik, Meen-Seon; Kim, Hak-Soo
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea; Cheil
 Industries Inc.
 SOURCE: Eur. Pat. Appl., 33 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1458048	A1	20040915	EP 2003-90262	200308 21
<--				
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004080775	A	20040920	KR 2003-15749	200303 13
JP 2005108439	A2	20050421	JP 2003-183239	200306 26
<--				
CN 1531134	A	20040922	CN 2003-155332	200308 27
<--				
US 2004185347	A1	20040923	US 2003-658272	200309 10
<--				
PRIORITY APPLN. INFO.:			KR 2003-15749	A 200303 13
<--				

OTHER SOURCE(S): MARPAT 141:228183

AB An electrolyte for a lithium secondary battery includes lithium salts, a nonaq. organic solvent, and additive compds. The additive compds. added to the electrolyte of the present invention decompose earlier than the organic solvent to form a conductive polymer layer on the surface of a pos. electrode, and prevent decomposition of the organic solvent. Accordingly, the electrolyte inhibits gas generation caused by decomposition of the organic solvent at initial charging, and thus reduces an increase of internal pressure and swelling during high temperature storage, and also improves safety of the battery during overcharge.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 4437-85-8,

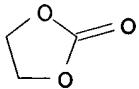
Butylene carbonate 27359-10-0, Trifluorotoluene

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

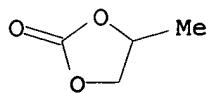
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

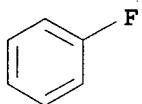


RN 108-32-7 HCPLUS

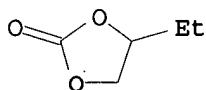
CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



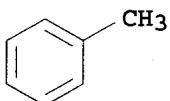
RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST nonaq electrolyte lithium secondary battery; safety nonaq
 electrolyte lithium secondary battery
 IT Secondary batteries
 (lithium; nonaq. electrolyte for lithium secondary
 battery)
 IT Battery electrolytes.
 Conducting polymers
 Safety
 Swelling, physical
 (nonaq. electrolyte for lithium secondary battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)
 IT Lithium alloy, base
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolyte for lithium secondary battery)

IT 67-71-0, Methylsulfone 71-43-2, Benzene, uses 77-77-0, Vinylsulfone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 108-88-3, Toluene, uses 126-33-0, Tetramethylene sulfone 127-63-9, Phenylsulfone 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid, chain ester 463-79-6D, Carbonic acid, cyclic ester 463-79-6D, Carbonic acid, ester 616-38-6, Dimethyl carbonate 620-32-6, Benzylsulfone 623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses 1889-59-4, Ethylvinylsulfone 3680-02-2, Methylvinylsulfone 4437-85-8, Butylene carbonate 5535-43-3, m-Chlorophenyl vinyl sulfone 5535-48-8, Phenylvinylsulfone 7439-93-2, Lithium, uses 7447-41-8, Lithium chloride (LiCl), uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide 14024-11-4, Aluminum lithium chloride AlLiCl₄ 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 27359-10-0, Trifluorotoluene 28122-14-7, p-Fluorophenyl vinyl sulfone 28452-93-9, Butadiene sulfone 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate 37220-89-6, Aluminum lithium oxide 39300-70-4, Lithium nickel oxide 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5, Lithium nonafluorobutanesulfonate 162684-16-4, Lithium manganese nickel oxide

RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 80-05-7, Bisphenol A, uses 95-15-8, Thianaphthene 117-80-6, 2,3-Dichloro-1,4-naphthoquinone 271-89-6, 2,3-Benzofuran 524-42-5, 1,2-Naphthoquinone 625-86-5, 2,5-Dimethylfuran 693-98-1, 2-Methylimidazole 1192-62-7, 2-Acetyl furan 1193-79-9, 2-Acetyl-5-methylfuran 4265-27-4, 2-Butylbenzofuran 7474-83-1, 3-Bromo-1,2-naphthoquinone 13243-65-7, 2,3-Dibromo-1,4-naphthoquinone 16851-82-4, 1-(Phenylsulfonyl)pyrrole

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

REFERENCE COUNT: 10 THERE ARE 10 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 11 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:652503 HCPLUS
 DOCUMENT NUMBER: 141:159902
 TITLE: Electrolyte for lithium secondary battery
 INVENTOR(S): Kim, Jin-Sung; Lee, Jong-Wook; Kim, Kwang-Sik; Kim, Young-Gyu; Kim, Je-Yun; Kim, Jong-Seob
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 12 pp., Cont.-in-part of U.S. Ser. No. 766,520.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004157133	A1	20040812	US 2003-718478	

US 2001009744	A1	20010726	US 2001-766520	200311 18
<--				
PRIORITY APPLN. INFO.:				200101 19
<--				
US 2001-766520				A2 200101 19
<--				
KR 2000-2947				A 200001 21
<--				
KR 2000-81253				A 200012 23
<--				

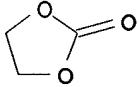
OTHER SOURCE(S): MARPAT 141:159902

AB Described is an **electrolyte** for a lithium secondary battery. The **electrolyte** includes a nonaq. **solvent** and a sulfone-based organic compound selected from 2,5-dihydrothiophene sulfone, a cyclic sulfone with a ring size of 5 to 8, and a sulfone represented by the formula RSO₃R₁ (where R and R₁ are independently selected from the group consisting of primary alkyl groups, secondary alkyl groups, tertiary alkyl groups, alkenyl groups, aryl groups; halogen-substituted primary alkyl groups, halogen-substituted secondary alkyl groups, halogen-substituted tertiary alkyl groups, halogen-substituted alkenyl groups, and halogen-substituted aryl groups) or a mixture thereof.

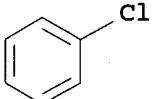
IT 96-49-1, Ethylene carbonate 108-90-7,
Chlorobenzene, uses 462-06-6, Fluorobenzene
27359-10-0, Trifluorotoluene
RL: DEV (Device component use); USES (Uses)
(**electrolyte** for lithium secondary battery)

RN 96-49-1 HCPLUS

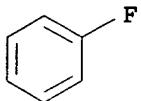
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



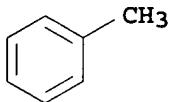
RN 108-90-7 HCPLUS
CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



RN 462-06-6 HCPLUS
CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 27359-10-0 HCPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

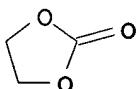
IC ICM H01M010-40
 ICS H01M004-58; H01M004-40
 INCL 429326000; 429199000; 429332000; 429340000; 429231950; 429231800
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST electrolyte lithium secondary battery
 IT Composites
 (carbon; electrolyte for lithium secondary battery)
 IT Battery electrolytes
 (electrolyte for lithium secondary battery)
 IT Aromatic hydrocarbons, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium secondary battery)
 IT Sulfones
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium secondary battery)
 IT Transition metal oxides
 RL: DEV (Device component use); USES (Uses)
 (lithiated; electrolyte for lithium secondary battery)
 IT Secondary batteries
 (lithium; electrolyte for lithium secondary battery)
 IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate
 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl carbonate
 108-88-3, Toluene, uses 108-90-7, Chlorobenzene, uses
 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid,
 ester, cyclic 463-79-6D, Carbonic acid, linear, cyclic,
 uses 616-38-6, Dimethyl carbonate 623-53-0, Ethylmethyl
 carbonate 1330-20-7, Xylene, uses 7439-93-2, Lithium, uses
 7440-44-0, Carbon, uses 21324-40-3, Lithium hexafluorophosphate
 27359-10-0, Trifluorotoluene
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium secondary battery)
 IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone 96-48-0,
 γ-Butyrolactone 126-33-0, Tetramethylene sulfone 127-63-9,
 Phenyl sulfone 383-29-9, 4-FluoroPhenyl sulfone 620-32-6, Benzyl
 sulfone 28452-93-9, Butadiene sulfone
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium secondary battery)

L56 ANSWER 12 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN

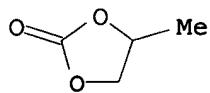
ACCESSION NUMBER: 2004:433706 HCPLUS
 DOCUMENT NUMBER: 140:426121
 TITLE: Electrolyte for a lithium ion battery
 INVENTOR(S): Noh, Hyeong-Gon
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 12 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004101762	A1	20040527	US 2003-716812	200311 18
KR 2004043993	A	20040527	KR 2002-72475	200211 20
JP 2004172084	A2	20040617	JP 2003-281842	200307 29
CN 1523702	A	20040825	CN 2003-10124932	200311 20
PRIORITY APPLN. INFO.:			KR 2002-72475	A 200211 20

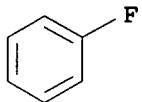
OTHER SOURCE(S): MARPAT 140:426121
 AB An electrolyte for a lithium secondary battery comprises a nonaq. organic solvent including 20 to 95 vol% of an ester-based or ether-based organic solvent based on the total amount of organic solvent; lithium salts; and an additive compound having at least two carbonate groups. A lithium secondary battery including this electrolyte has good swelling inhibition properties as well as electrochem. properties such as capacity and cycle life.
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium ion battery)
 RN 96-49-1 HCPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



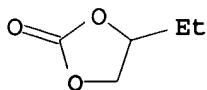
RN 108-32-7 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



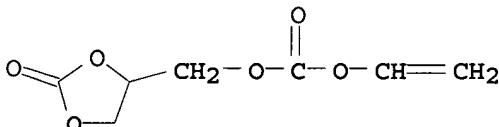
RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



IT 692729-54-7
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium ion battery)
 RN 692729-54-7 HCAPLUS
 CN Carbonic acid, ethenyl (2-oxo-1,3-dioxolan-4-yl)methyl ester (9CI)
 (CA INDEX NAME)



IC ICM H01M010-40
 INCL 429326000; 429329000; 429330000; 429331000; 429332000; 429340000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST electrolyte lithium ion battery
 IT Battery electrolytes
 (electrolyte for lithium ion battery)
 IT Aromatic hydrocarbons, uses
 Esters, uses
 Ethers, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium ion battery)
 IT Sulfones
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium ion battery)
 IT Swelling, physical
 (inhibition; electrolyte for lithium ion battery)
 IT Secondary batteries
 (lithium; electrolyte for lithium ion battery)
 IT 79-20-9, Methyl acetate 96-48-0, γ -Butyrolactone
 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate

108-32-7, Propylene carbonate 109-60-4, n-Propyl acetate
 141-78-6, Ethyl acetate, uses 142-96-1, Dibutyl ether
 462-06-6, Fluorobenzene 463-79-6D, Carbonic acid,
 ester 616-38-6, Dimethyl carbonate 623-53-0, Ethyl
 methyl carbonate 4437-85-8, Butylene carbonate
 7439-93-2D, Lithium, salt 7447-41-8, Lithium chloride (LiCl), uses
 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide
 12355-58-7 14024-11-4, Lithium tetrachloroaluminate 14283-07-9,
 Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
 Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate
 90076-65-6 131651-65-5

RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium ion battery)

IT 77-77-0, Vinyl sulfone 872-36-6, Vinylene carbonate 692729-49-0

692729-52-5 692729-54-7 692729-56-9

RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium ion battery)

L56 ANSWER 13 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:352048 HCPLUS

DOCUMENT NUMBER: 140:378001

TITLE: Secondary nonaqueous electrolyte
 battery

INVENTOR(S): Matsui, Toru; Deguchi, Masaki; Sonoda, Kumiko;
 Nishimura, Makiko; Koshina, Shigeru

PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 18 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 2004134261	A2	20040430	JP 2002-298206	200210 11

PRIORITY APPLN. INFO.:
 JP 2002-298206
 200210
 11

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AB The battery comprises a cathode, an anode, and a nonaq.
 electrolyte solution, having a solute dissolved in a
 solvent mixture which contains a main solvent and a
 secondary solvent; where the secondary solvent
 comprises a compound A, selected from cyclohexyl benzene, biphenyl,
 and/or di-Ph ether, and a compound X whose oxidation potential
 is 0.1-0.4 V higher than that of the compound A; and the weight ratio of
 the secondary solvent to the solvent mixture and
 the compound X to the secondary solvent is 0.01-5 and 20-99
 resp.

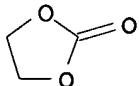
IT 96-49-1, Ethylene carbonate 321-60-8,
 2-Fluorobiphenyl 362-59-4, 2-Trifluoromethyl biphenyl
 396-64-5

RL: DEV (Device component use); USES (Uses)

(electrolyte solvents containing carbonates and aromatic compds. for secondary batteries)

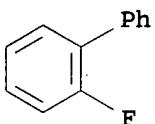
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



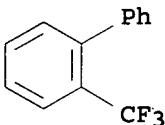
RN 321-60-8 HCPLUS

CN 1,1'-Biphenyl, 2-fluoro- (9CI) (CA INDEX NAME)



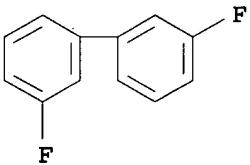
RN 362-59-4 HCPLUS

CN 1,1'-Biphenyl, 2-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 396-64-5 HCPLUS

CN 1,1'-Biphenyl, 3,3'-difluoro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST secondary battery nonaq **electrolyte solvent**
carbonate arom compd

IT Battery **electrolytes**

(electrolyte solvents containing carbonates and aromatic compds. for secondary batteries)

IT 92-52-4, Biphenyl, uses 96-48-0, γ -Butyrolactone

96-49-1, Ethylene carbonate 98-82-8 100-41-4, Phenyl
ethane, uses 101-81-5, Diphenyl methane 101-84-8, Diphenyl
ether 105-58-8, Diethyl carbonate 108-88-3, Phenyl
methane, uses 321-60-8, 2-Fluorobiphenyl 330-93-8,
Bis(4-fluorophenyl) ether 362-59-4,

2-Trifluoromethyl biphenyl 396-64-5 519-73-3, Triphenyl
methane 527-21-9, Tetrafluoro-p-benzoquinone 623-53-0, Ethyl

methyl carbonate 791-28-6, Triphenylphosphine oxide 827-52-1,
 Cyclohexyl benzene 872-36-6, Vinylene carbonate 960-71-4,
 Triphenyl borane 2367-02-4, 4-Trifluoromethyl diphenyl
 ether 14283-07-9, Lithium tetrafluoroborate 21324-40-3,
 Lithium hexafluorophosphate 142990-38-3 142990-39-4
 684215-50-7 684215-51-8
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvents containing carbonates and
 aromatic compds. for secondary batteries)

L56 ANSWER 14 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:286863 HCPLUS
 DOCUMENT NUMBER: 140:306756
 TITLE: Organic electrolytic solution for
 lithium battery
 INVENTOR(S): Kim, Ju-Yup; Ryu, Young-Gyo; Lee, Seok-Soo;
 Hwang, Seung-Sik
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Eur. Pat. Appl., 13 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1406339	A1	20040407	EP 2003-254312	200307 08
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EP 1406339	B1	20060412		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
KR 2004031162	A	20040413	KR 2002-60530	200210 04
CN 1487619	A	20040407	CN 2003-136341	200305 29
<--				
US 2004067418	A1	20040408	US 2003-449775	200306 02
<--				
JP 2004127943	A2	20040422	JP 2003-345737	200310 03
<--				
PRIORITY APPLN. INFO.:			KR 2002-60530	A
				200210 04
<--				

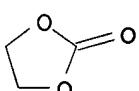
OTHER SOURCE(S): MARPAT 140:306756

AB Provided is an organic electrolytic solution including a lithium salt and an organic solvent containing an alkoxy-containing compound such as 1,1,3-trimethoxypropane. When polyglyme and an organic compound having dioxolane moiety are further added into the organic

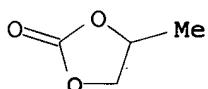
electrolytic solution, a lithium metal stabilizing effect and the ionic conductivity of lithium ions are enhanced, and thus, the charging/discharging efficiency of lithium is greatly improved. Such an organic electrolytic solution can be effectively used for any kind of lithium batteries and lithium sulfur batteries, even those which use a lithium metal anode.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 646-06-0, 1,3-Dioxolane 1072-47-5, 4-Methyl-1,3-dioxolane 1072-57-7, 1,3-Dioxolane, 4,5-dimethyl- 29921-38-8, 4-Ethyl-1,3-dioxolane 676610-04-1
 RL: DEV (Device component use); USES (Uses)
 (organic electrolytic solution for lithium battery)

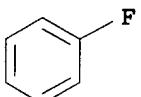
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



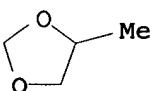
RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 646-06-0 HCAPLUS
 CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)

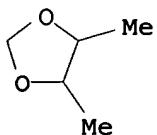


RN 1072-47-5 HCAPLUS
 CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



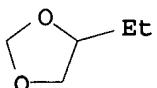
RN 1072-57-7 HCAPLUS

CN 1,3-Dioxolane, 4,5-dimethyl- (7CI, 8CI, 9CI) (CA INDEX NAME)



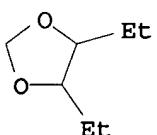
RN 29921-38-8 HCPLUS

CN 1,3-Dioxolane, 4-ethyl- (8CI, 9CI) (CA INDEX NAME)



RN 676610-04-1 HCPLUS

CN 1,3-Dioxolane, 4,5-diethyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery org **electrolyte**

IT Secondary batteries

(lithium; organic **electrolytic** solution for lithium battery)

IT Battery **electrolytes**

(organic **electrolytic** solution for lithium battery)

IT Carbonaceous materials (technological products)

Polyoxyalkylenes, uses

RL: DEV (Device component use); USES (Uses)

(organic **electrolytic** solution for lithium battery)

IT Lithium alloy, base

RL: DEV (Device component use); USES (Uses)

(organic **electrolytic** solution for lithium battery)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate

105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate

110-71-4 111-96-6, Diglyme 112-36-7, Diethylene glycol diethyl

ether 112-49-2, Triethylene glycol dimethyl ether

321-28-8 456-49-5 459-60-9 462-06-6, Fluorobenzene

616-38-6, DiMethyl carbonate 623-53-0, Ethyl methyl carbonate

646-06-0, 1,3-Dioxolane 872-36-6, Vinylene carbonate

1072-47-5, 4-Methyl-1,3-dioxolane 1072-57-7,

1,3-Dioxolane, 4,5-dimethyl- 4499-99-4, Triethylene glycol diethyl

ether 7439-93-2, Lithium, uses 7704-34-9, Sulfur, uses

7782-42-5, Graphite, uses 14315-97-0, 1,1,3-Trimethoxypropane

25322-68-3, Peo 29921-38-8, 4-Ethyl-1,3-dioxolane

73506-93-1, Diethoxyethane 74432-42-1, Lithium polysulfide

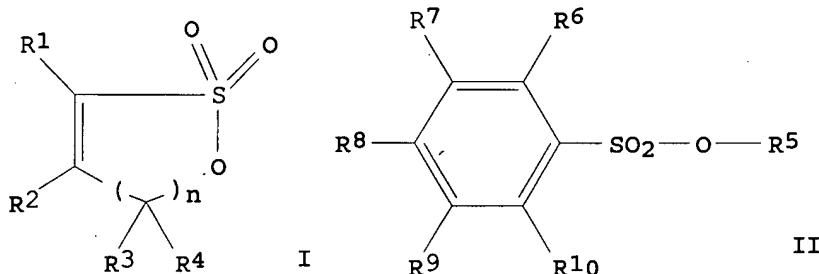
90076-65-6 676610-04-1

RL: DEV (Device component use); USES (Uses)

(organic **electrolytic** solution for lithium battery)

L56 ANSWER 15 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:219300 HCPLUS
DOCUMENT NUMBER: 140:256257
TITLE: Nonaqueous electrolyte solution and
secondary lithium battery using the solution
INVENTOR(S): Hinohara, Akio; Hayashi, Takeshi
PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 21 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

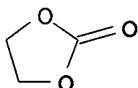
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004087168	A2	20040318	JP 2002-243094	200208 23
			JP 2002-243094	200208 23
PRIORITY APPLN. INFO. : <--				
OTHER SOURCE(S) : MARPAT 140:256257 <-- GI				



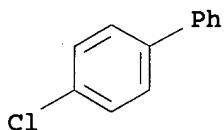
AB The **electrolyte** solution contains ≥ 1 chlorinated aromatic compound selected from chlorinated biphenyl, chlorinated naphthalene, chlorinated fluorene, and chlorinated diphenylmethane; a sulfonyl group containing compound, other nonaq. **solvent**, and a Li containing **electrolyte**. The sulfonyl group containing compound is selected from I [R1-4 = H, halogen, or C1-12 (halogenated) alkyl groups, n = integer 0-3], II [R5-10 = H, Li, halogen, sulfonate **ester** group, carbonate **ester** group, Li sulfonate group, or C1-12 (halogenated) alkyl group], and sulfonamides.

IT 96-49-1, Ethylene carbonate 2051-62-9,
4-Chlorobiphenyl
RL: DEV (Device component use); USES (Uses)
(**electrolyte** solns. containing chlorinated aromatic compds.
and sulfonyl group containing compds. for secondary lithium batteries)

RN 96-49-1 HCPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 2051-62-9 HCPLUS
 CN 1,1'-Biphenyl, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M002-34; H01M004-02; H01M004-58; H01M006-16; H01M010-48
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST sultone secondary lithium battery electrolyte soln;
 sulfonate secondary lithium battery electrolyte soln;
 sulfonamide secondary lithium battery electrolyte soln;
 chlorinated arom compd secondary lithium battery electrolyte
 soln
 IT Battery electrolytes
 (electrolyte solns. containing chlorinated aromatic compds.
 and sulfonyl group containing compds. for secondary lithium
 batteries)
 IT 96-49-1, Ethylene carbonate 623-53-0, Methyl ethyl
 carbonate 872-36-6, Vinylene carbonate 1120-71-4,
 1,3-Propanesultone 2051-62-9, 4-Chlorobiphenyl
 21324-40-3, Lithium hexafluorophosphate 21806-61-1
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing chlorinated aromatic compds.
 and sulfonyl group containing compds. for secondary lithium
 batteries)

L56 ANSWER 16 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:203431 HCPLUS
 DOCUMENT NUMBER: 140:238483
 TITLE: Electrolyte for a lithium battery
 INVENTOR(S): Park, Yong-Chul; Jung, Won-Ii; Kim, Geun-Bae;
 Cho, Jae-Phil; Jung, Cheol-Soo
 PATENT ASSIGNEE(S): S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 13 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004048163	A1	20040311	US 2003-656086	200309

05

KR 2004022054 A 20040311 KR 2002-53879
 <--
 200209

JP 2004103573 A2 20040402 JP 2003-282119
 <--
 200307
 29

CN 1495961 A 20040512 CN 2003-164853
 <--
 200309
 06

PRIORITY APPLN. INFO.: KR 2002-53879 A
 <--
 200209
 06

<--

OTHER SOURCE(S): MARPAT 140:238483

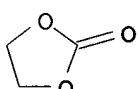
AB An electrolyte for a lithium battery includes a nonaq. organic solvent, a lithium salt, and an additive comprising (a) a sulfone-based compound and (b) a C3-30 organic peroxide or azo-based compound. The electrolyte may further include a poly(ester) (meth)acrylate or a polymer that is derived from a (polyester)polyol with at least three hydroxyl (-OH) groups, where a portion or all of the hydroxyl groups are substituted with a (meth)acrylic ester and the remaining hydroxyl groups that are not substituted with the (meth)acrylic ester are substituted with a group having no radical reactivity. The lithium battery comprising the electrolyte of the present invention has a significantly improved charge-discharge and cycle life characteristics, recovery capacity ratio at high temperature, and swelling inhibition properties.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 108-90-7, Chlorobenzene, uses 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate 27359-10-0, Trifluorotoluene

RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)

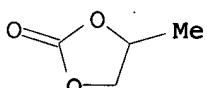
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



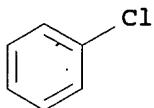
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)

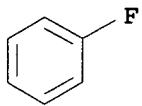


RN 108-90-7 HCAPLUS

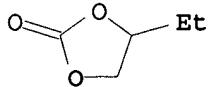
CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



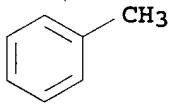
RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 4437-85-8 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 27359-10-0 HCPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M010-40
 INCL 429326000; 429329000; 429339000; 429340000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST lithium battery electrolyte
 IT Battery electrolytes
 (electrolyte for lithium battery)
 IT Aromatic hydrocarbons, uses
 Carbonates, uses
 Esters, uses
 Ethers, uses
 Ketones, uses
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery)
 IT Azo compounds
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium battery)
 IT Carbonaceous materials (technological products)
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte for lithium battery)
 IT Sulfones

RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte for lithium battery)

IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(hydroxy-terminated; electrolyte for lithium battery)

IT Secondary batteries
(lithium; electrolyte for lithium battery)

IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(methacrylate; electrolyte for lithium battery)

IT Peroxides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic, C3-30; electrolyte for lithium battery)

IT Esters, uses
RL: DEV (Device component use); USES (Uses)
(poly-; electrolyte for lithium battery)

IT Imides
Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(sulfonimides, perfluoro derivs., lithium salts;
electrolyte for lithium battery)

IT 56-81-5, Glycerol, uses 71-43-2, Benzene, uses 96-49-1,
Ethylene carbonate 98-95-3, Nitrobenzene, uses 105-58-8, Diethyl
carbonate 108-32-7, Propylene carbonate 108-88-3,
Toluene, uses 108-90-7, Chlorobenzene, uses 149-32-6,
Erythritol 462-06-6, Fluorobenzene 616-38-6, Dimethyl
carbonate 623-53-0, Methylethyl carbonate 623-96-1, Dipropyl
carbonate 1330-20-7, Xylene, uses 4437-85-8, Butylene
carbonate 7790-99-0, Iodine chloride (ICl) 7791-03-9, Lithium
perchlorate 10377-51-2, Lithium iodide (LiI) 14024-11-4, Lithium
tetrachloroaluminate 14283-07-9, Lithium tetrafluoroborate
18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium
hexafluorophosphate 27359-10-0, Trifluorotoluene
29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
triflate 35363-40-7, Ethyl propyl carbonate 39300-70-4, Lithium
nickel oxide 56525-42-9, Methyl propyl carbonate 90076-65-6
131651-65-5, Lithium nonafluorobutanesulfonate 162684-16-4,
Lithium manganese nickel oxide 193215-00-8, Cobalt
lithiummanganese nickel oxide Co0.1LiMn0.2Ni0.702
RL: DEV (Device component use); USES (Uses)
(electrolyte for lithium battery)

IT 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone 78-67-1,
2,2'-Azobisisobutyronitrile 94-36-0, Benzoyl peroxide, uses
105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl
peroxide 126-33-0, Tetramethylene sulfone 127-63-9, Phenyl
sulfone 620-32-6, Benzyl sulfone 1561-49-5, Dicyclohexylperoxy
dicarbonate 1712-87-4, m-Toluoyl peroxide 3006-82-4,
tert-Butylperoxy-2-ethyl hexanoate 14666-78-5 15520-11-3,
Bis(4-tert-butylcyclohexyl)peroxy dicarbonate 26748-41-4
28452-93-9, Butadiene sulfone 32752-09-3, Isobutyl peroxide
92177-99-6, 3,3,5-Trimethylhexanoyl peroxide
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte for lithium battery)

IT 79-10-7DP, Acrylic acid, reaction product with dipentaerythritol and
 ϵ -caprolactone and butylcarbonic acid 126-58-9DP,
Dipentaerythritol, reaction product with ϵ -caprolactone and
acrylic acid and butylcarbonic acid 502-44-3DP,
 ϵ -Caprolactone, reaction product with dipentaerythritol and
acrylic acid and butylcarbonic acid 10411-26-4DP,
MonoButylcarbonate, reaction product with dipentaerythritol and

ϵ -caprolactone and acrylic acid
 RL: MOA (Modifier or additive use); SPN (Synthetic preparation);
 PREP (Preparation); USES (Uses)
 (electrolyte for lithium battery)

L56 ANSWER 17 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2004:182343 HCAPLUS
 DOCUMENT NUMBER: 140:202488
 TITLE: Polymer electrolyte for lithium
 secondary battery with improved safety and
 reduced swelling
 INVENTOR(S): Lee, Yong-beom
 PATENT ASSIGNEE(S): Samsung Sdi Co.,ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 8 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004043298	A1	20040304	US 2003-440245	200305 19
KR 2004020631	A	20040309	KR 2002-52280	200208 31
CN 1479401	A	20040303	CN 2003-152463	200307 04
PRIORITY APPLN. INFO.:			KR 2002-52280	A 200208 31

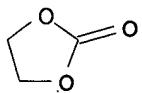
AB The invention concerns a polymer electrolyte that extends the cycle life, improves the safety, and reduces the swelling of a battery, compared with a polymer electrolyte containing a poly(alkylene oxide) polymer. Also, a lithium battery utilizes the polymer electrolyte. The polymer electrolyte contains a polymerized product from a polymer electrolyte forming composition containing a multifunctional isocyanurate monomer of a particular structure, a lithium salt, and a nonaq. organic solvent.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 27858-05-5, DiFluorobenzene

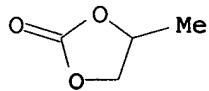
RL: DEV (Device component use); USES (Uses)
 (polymer electrolyte for lithium secondary battery with improved safety and reduced swelling)

RN 96-49-1 HCAPLUS

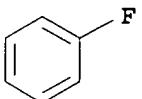
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 27858-05-5 HCAPLUS
 CN Benzene, difluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



2 (D1-F)

IC ICM H01M006-18
 INCL 429323000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST polymer electrolyte lithium secondary battery improved
 safety reduced swelling
 IT Peroxides, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (acyl, polymerization initiator; polymer electrolyte for
 lithium secondary battery with improved safety and reduced
 swelling)
 IT Peroxides, processes
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (alkyl, polymerization initiator; polymer electrolyte for
 lithium secondary battery with improved safety and reduced
 swelling)
 IT Hydroperoxides
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)

(alkyl, tertiary, polymerization initiator; polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Secondary batteries
(lithium; polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Esters, processes
Ketals
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(peroxy, polymerization initiator; polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Carbonates, processes
Peroxides, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(peroxycarbonates, polymerization initiator; polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Battery electrolytes
Polymerization catalysts
Safety
Swelling, physical
(polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Carbon fibers, uses
Carbonaceous materials (technological products)
RL: DEV (Device component use); USES (Uses)
(polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Azo compounds
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(polymerization initiator; polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(polymer **electrolyte** for lithium secondary battery with improved safety and reduced swelling)

96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ -Butyrolactone
96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
107-31-3, Methyl formate 108-32-7, Propylene carbonate
109-94-4, Ethyl formate 109-99-9, Thf, uses 112-49-2, Triglyme
143-24-8, Tetraglyme 462-06-6, Fluorobenzene 616-38-6,
Dimethyl carbonate 4824-75-3, Butylmethyl carbonate 7439-93-2,
Lithium, uses 7704-34-9, Sulfur, uses 7704-34-9D, Sulfur,
compds. 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate
12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
27858-05-5, DiFluorobenzene 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
Ethyl propylcarbonate 39300-70-4, Lithium nickel oxide
39457-42-6, Lithium manganese oxide 51177-06-1, Chromium lithium
oxide 52627-24-4, Cobalt lithium oxide 56525-42-9, Methyl
propylcarbonate 73506-93-1, Diethoxyethane 90076-65-6
131651-65-5 132843-44-8 654675-99-7, Lithium boride fluoride
libf6
RL: DEV (Device component use); USES (Uses)
(polymer **electrolyte** for lithium secondary battery with

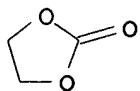
improved safety and reduced swelling)
 IT 42033-33-0P, Tris(2-acryloyloxy)ethyl isocyanurate homopolymer
 90802-77-0P 93295-01-3P
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
 (polymer electrolyte for lithium secondary battery with improved safety and reduced swelling)
 IT 15520-11-3, Di(4-tert-butylcyclohexyl)peroxy dicarbonate
 34099-48-4, Peroxydicarbonate
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (polymerization initiator; polymer electrolyte for lithium secondary battery with improved safety and reduced swelling)

L56 ANSWER 18 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:159908 HCAPLUS
 DOCUMENT NUMBER: 140:184751
 TITLE: Secondary lithium battery nonaqueous electrolytes and secondary lithium batteries with prevented overcharging
 INVENTOR(S): Shizuka, Kenji; Kinoshita, Shinichi; Noda, Daisuke
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004063114	A2	20040226	JP 2002-216090	200207 25
<--				
PRIORITY APPLN. INFO.:	JP 2002-216090			
	200207 25			
<--				

OTHER SOURCE(S): MARPAT 140:184751
 AB Li salt-containing nonaq. electrolytes also containing overcharging inhibitors and (di)sulfides are claimed. Preferable structure for the the overcharging inhibitor is C₆R₁R₂R₃R₄R₅R₆ (R₁-6 = H, halogen, (un)substituted hydrocarbon, alkoxy, aryloxy; R₁ + R₂ may form (un)substituted, phenyleneoxy, ethyleneoxy, trimethyleneoxy, propyleneoxy, vinyleneoxy). Preferable overcharging inhibitors and (di)sulfides are also given.
 IT 96-49-1, Ethylene carbonate
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (electrolyte solvent; lithium secondary batteries with nonaq. electrolytes containing overcharging inhibitors and disulfides)
 RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)

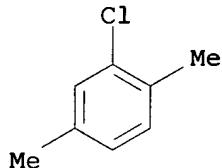


IT 95-72-7, 2-Chloro-p-xylene 321-60-8,
 2-Fluorobiphenyl 324-74-3, 4-Fluorobiphenyl
 392-69-8, 2-Fluoromesitylene 396-64-5,
 3,3'-Difluorobiphenyl 398-23-2, 4,4'-Difluorobiphenyl
 583-70-0, 4-Bromo-m-xylene 615-60-1,
 4-Chloro-o-xylene

RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (overcharging inhibitor; lithium secondary batteries with nonaqueous
 electrolytes containing overcharging inhibitors and
 disulfides)

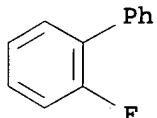
RN 95-72-7 HCAPLUS

CN Benzene, 2-chloro-1,4-dimethyl- (9CI) (CA INDEX NAME)



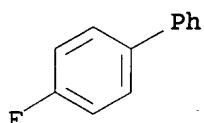
RN 321-60-8 HCAPLUS

CN 1,1'-Biphenyl, 2-fluoro- (9CI) (CA INDEX NAME)



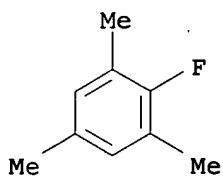
RN 324-74-3 HCAPLUS

CN 1,1'-Biphenyl, 4-fluoro- (9CI) (CA INDEX NAME)

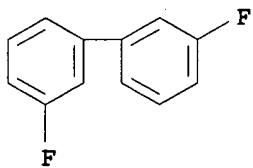


RN 392-69-8 HCAPLUS

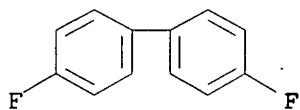
CN Benzene, 2-fluoro-1,3,5-trimethyl- (9CI) (CA INDEX NAME)



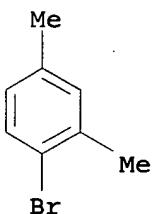
RN 396-64-5 HCPLUS
 CN 1,1'-Biphenyl, 3,3'-difluoro- (9CI) (CA INDEX NAME)



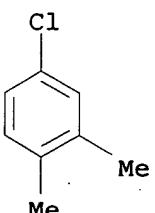
RN 398-23-2 HCPLUS
 CN 1,1'-Biphenyl, 4,4'-difluoro- (9CI) (CA INDEX NAME)



RN 583-70-0 HCPLUS
 CN Benzene, 1-bromo-2,4-dimethyl- (9CI) (CA INDEX NAME)



RN 615-60-1 HCPLUS
 CN Benzene, 4-chloro-1,2-dimethyl- (9CI) (CA INDEX NAME)



IC ICM H01M010-40

MEI HUANG EIC1700 REM4B28 571-272-3952

18/12/2006

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 25, 27

ST nonaq **electrolyte** lithium secondary battery; overcharging inhibitor lithium secondary battery **electrolyte**; disulfide additive lithium secondary battery **electrolyte**

IT Disulfides
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolytes** containing; lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT **Battery electrolytes**
 (lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT Secondary batteries
 (lithium; lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT 21324-40-3, Lithium hexafluorophosphate (LiPF₆)
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolyte salt**; lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 872-36-6, Vinylene carbonate
 RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolyte solvent**; lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT 2127-03-9, 2,2'-Dipyridyl disulfide 2127-10-8,
 2,2'-Dithiobis(5-nitropyridine) 2645-22-9, 4,4'-Dipyridyl disulfide 15658-35-2, 6,6'-Dithiodinicotinic acid
 RL: DEV (Device component use); MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
 (**electrolytes** containing; lithium secondary batteries with nonaq. **electrolytes** containing overcharging inhibitors and disulfides)

IT 92-52-4, Biphenyl, uses 95-72-7, 2-Chloro-p-xylene
 101-81-5, Diphenylmethane 101-84-8, Diphenyl **ether**
 103-29-7, 1,2-Diphenylethane 104-66-5, 1,2-Diphenoxylethane
 104-92-7, 4-Bromoanisole 132-64-9, Dibenzofuran 321-60-8
 , 2-Fluorobiphenyl 324-74-3, 4-Fluorobiphenyl 362-56-1,
 1,2,4,5-Tetrafluoro-3,6-dimethoxybenzene 392-69-8,
 2-Fluoromesitylene 396-64-5, 3,3'-Difluorobiphenyl
 398-23-2, 4,4'-Difluorobiphenyl 452-10-8,
 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9,
 4-Fluoroanisole 583-70-0, 4-Bromo-m-xylene 612-75-9,
 3,3'-Dimethylbiphenyl 613-33-2, 4,4'-Dimethylbiphenyl
 615-60-1, 4-Chloro-o-xylene 623-12-1, 4-Chloroanisole
 643-58-3, 2-Methylbiphenyl 643-93-6, 3-Methylbiphenyl 644-08-6,
 4-Methylbiphenyl 766-51-8, 2-Chloroanisole 778-22-3,
 2,2-Diphenylpropane 827-52-1, Cyclohexylbenzene 1625-92-9,
 4-tert-Butylbiphenyl 1667-08-9 1973-15-5, 3-Cyclohexylbiphenyl
 2845-89-8, 3-Chloroanisole 3061-36-7, 1,4-Diphenoxylbenzene
 3150-40-1, 2,3,5,6-Tetrafluoro-4-methylanisole 3379-38-2,
 1,3-Diphenoxylbenzene 4016-06-2, 1,3-Dicyclohexylbenzene
 6738-04-1, 2-Phenoxybiphenyl 7051-16-3, 1,3-Dimethoxy-5-chlorobenzene 17715-69-4, 1,3-Dimethoxy-4-bromobenzene

20273-26-1 25245-34-5 26140-60-3, Terphenyl 52189-63-6,
 1-Fluoro-3,5-dimethoxybenzene 82830-49-7, 1,4-Dimethoxy-2-
 fluorobenzene 93343-10-3, 3,5-Difluoroanisole 97762-38-4
 258268-48-3

RL: DEV (Device component use); MOA (Modifier or additive use); TEM
 (Technical or engineered material use); USES (Uses)
 (overcharging inhibitor; lithium secondary batteries with nonaq.
 electrolytes containing overcharging inhibitors and
 disulfides)

L56 ANSWER 19 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2004:119843 HCAPLUS

DOCUMENT NUMBER: 140:149224

TITLE: Nonaqueous electrolytic solution with
 improved safety for lithium battery

INVENTOR(S): Kim, Jun-ho; Lee, Ha-young; Choy, Sang-hoon;
 Kim, Ho-sung

PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea

SOURCE: U.S. Pat. Appl. Publ., 12 pp.

CODEN: USXXCO

DOCUMENT TYPE: Patent

LANGUAGE: English

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2004029018	A1	20040212	US 2003-637554	200308 11
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US 7105250	B2	20060912		
KR 2004015420	A	20040219	KR 2002-47510	200208 12
JP 2004079532	A2	20040311	JP 2003-290946	200308 08
			<--	
CN 1495960	A	20040512	CN 2003-158672	200308 12
			<--	
PRIORITY APPLN. INFO.:			KR 2002-47510	A
				200208 12
			<--	

AB A nonaq. electrolytic solution and a lithium battery
 employing the same include a lithium salt, an organic solvent
 , and a halogenated benzene compound. The use of the nonaq.
 electrolytic solution causes formation of a polymer by
 oxidative decomposition of the electrolytic solution even if a
 sharp voltage increase occurs due to overcharging of the battery,
 leading to consumption of an overcharge current, thus protecting the
 battery.

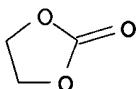
IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 462-06-6, Fluorobenzene

RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solution with improved safety for

lithium battery)

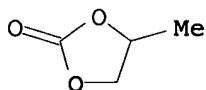
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



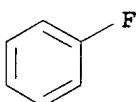
RN 108-32-7 HCPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 462-06-6 HCPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

INCL 429326000; 429200000; 429340000; 429331000; 429332000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery nonaq electrolyte soln improved safety

IT Esters, uses

Ethers, uses

Hydrocarbons, uses

RL: MOA (Modifier or additive use); USES (Uses)

(C1-20; nonaq. electrolytic solution with improved safety for lithium battery)

IT Aromatic hydrocarbons, uses

RL: MOA (Modifier or additive use); USES (Uses)

(C5-20; nonaq. electrolytic solution with improved safety for lithium battery)

IT Secondary batteries

(lithium; nonaq. electrolytic solution with improved safety for lithium battery)

IT Battery electrolytes

(nonaq. electrolytic solution with improved safety for lithium battery)

IT Polyesters, uses

RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolytic solution with improved safety for lithium battery)

IT Alcohols, uses

RL: MOA (Modifier or additive use); USES (Uses)

(polyhydric; nonaq. electrolytic solution with improved safety for lithium battery)

IT 3087-37-4, Tetrapropyltitanate

RL: CAT (Catalyst use); USES (Uses)

(nonaq. electrolytic solution with improved safety for

lithium battery)
 IT 502-44-3, ϵ -Caprolactone 7439-93-2D, Lithium, salt
 12190-79-3, Cobalt lithium oxide colio2
 RL: DEV (Device component use); USES (Uses)
 (nonaq. electrolytic solution with improved safety for
 lithium battery)
 IT 126-58-9DP, Dipentaerythritol, derivative
 RL: DEV (Device component use); SPN (Synthetic preparation); PREP
 (Preparation); USES (Uses)
 (nonaq. electrolytic solution with improved safety for
 lithium battery)
 IT 56-81-5, Glycerol, uses 67-71-0, Methyl sulfone 71-43-2D,
 Benzene, halogenated 77-77-0, Vinyl sulfone 94-36-0,
 Benzooylperoxide, uses 96-49-1, Ethylene carbonate
 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl
 peroxide 108-32-7, Propylene carbonate 115-77-5,
 Pentaerythritol, uses 126-33-0, Tetramethylene sulfone 126-58-9,
 DiPentaerythritol 127-63-9, Phenyl sulfone 456-55-3,
 Trifluoromethyl phenyl ether 462-06-6,
 Fluorobenzene 620-32-6, Benzyl sulfone 623-53-0, Ethyl methyl
 carbonate 1561-49-5, Dicyclohexyl peroxy dicarbonate 1712-87-4,
 m-Toluoyl peroxide 2972-19-2 3006-82-4, tert-Butylperoxy-2-
 ethylhexanoate 9002-88-4, Polyethylene 9003-07-0, Polypropylene
 14666-78-5 15520-11-3, Bis(4-tert-butylcyclohexyl)
 peroxydicarbonate 21151-56-4, Benzene, 1-chloro-4-(chloromethoxy)-
 21324-40-3, Lithium hexafluorophosphate 28452-93-9, Butadiene
 sulfone 32752-09-3, Isobutyl peroxide 49717-97-7, 2-Propenoic
 acid, 2-methyl-, ion(1-) homopolymer, uses 92177-99-6,
 3,3,5-Trimethylhexanoylperoxide 651294-25-6 651294-26-7
 651294-27-8
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. electrolytic solution with improved safety for
 lithium battery)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L56 ANSWER 20 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:910398 HCPLUS
 DOCUMENT NUMBER: 139:398017
 TITLE: Nonaqueous electrolyte secondary
 battery having high capacity and excellent
 storage property, loading characteristic and
 cycle property
 INVENTOR(S): Kotado, Minoru; Suzuki, Hitoshi
 PATENT ASSIGNEE(S): Mitsubishi Chemical Corp., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
-----	-----	-----	-----	-----
JP 2003331915	A2	20031121	JP 2002-141142	200205
				16

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PRIORITY APPLN. INFO.:

JP 2002-141142

200205

16

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AB In nonaq. **electrolyte** secondary battery comprising Li-occluding and releasing anode, cathode, and **electrolyte** obtained by dissolving Li salt in a nonaq. **solvent**, wherein the nonaq. **solvent** contains ≥ 1 of unsatd. bond-having cyclic carbonic **esters** and acid anhydrides, S-containing organic compound, and ≥ 1 of C ≤ 9 F-containing aromatic compds., aliphatic hydrocarbons, and F-containing aliphatic hydrocarbon compds. The nonaq. **electrolyte** secondary battery has high capacity even after storage.

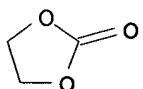
IT 96-49-1, Ethylene carbonate 462-06-6,

Fluorobenzene

RL: TEM (Technical or engineered material use); USES (Uses) (nonaq. **electrolyte** containing; nonaq. **electrolyte** secondary battery having high capacity and excellent storage property, loading characteristic and cycle property)

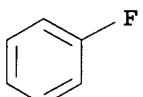
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 462-06-6 HCAPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST nonaq **electrolyte** secondary battery capacity storage

stability

IT Anhydrides

Hydrocarbons, uses

RL: TEM (Technical or engineered material use); USES (Uses) (nonaq. **electrolyte** containing; nonaq. **electrolyte** secondary battery having high capacity and excellent storage property, loading characteristic and cycle property)

IT Secondary batteries

(nonaq. **electrolyte** secondary battery having high capacity and excellent storage property, loading characteristic and cycle property)

IT 96-49-1, Ethylene carbonate 126-33-0, Sulfolane

142-82-5, Heptane, uses 462-06-6, Fluorobenzene

623-53-0, Ethyl methyl carbonate 872-36-6, Vinylene carbonate

1120-71-4, 1,3-Propanesultone 14283-07-9, Lithium

tetrafluoroborate (LiBF₄) 21324-40-3, Lithium hexafluorophosphate (LiPF₆)

RL: TEM (Technical or engineered material use); USES (Uses)

(nonaq. **electrolyte** containing; nonaq. **electrolyte**)

secondary battery having high capacity and excellent storage property, loading characteristic and cycle property)
 IT 66-27-3, Methyl methanesulfonate
 RL: TEM (Technical or engineered material use); USES (Uses)
 (nonaq. electrolyte secondary battery having high capacity and excellent storage property, loading characteristic and cycle property)

L56 ANSWER 21 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:796195 HCAPLUS
 DOCUMENT NUMBER: 139:294681
 TITLE: Electrolyte for lithium battery to reduce overcharge and improve electrochemical characteristics
 INVENTOR(S): Kim, Jun-Ho; Lee, Ha-Young; Choy, Sang-Hoon;
 Kim, Ho-Sung; Noh, Hyeong-Gon
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 19 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

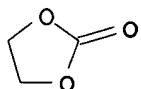
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003190529	A1	20031009	US 2003-393294	200303 21
KR 2003079310	A	20031010	KR 2002-18264	200204 03
CN 1449070	A	20031015	CN 2003-108529	200303 28
JP 2003297426	A2	20031017	JP 2003-100349	200304 03
PRIORITY APPLN. INFO.:			KR 2002-18264	A 200204 03

OTHER SOURCE(S): MARPAT 139:294681
 AB An electrolyte for a lithium battery includes a nonaq. organic solvent, a lithium salt, and an additive comprising (a) a compound represented by the formula $[(R1)nC6H(6-n+m)(X)m]$, and (b) a compound selected from the group consisting of a sulfone-based compound, a poly(ester) (meth)acrylate, a polymer of poly(ester) (meth)acrylate, and a mixture thereof: wherein R1 is a C1-10 alkyl, a C 1-10 alkoxy, or a C6-10 aryl, and preferably a Me, Et, or methoxy, X is a halogen, and m and n are integers ranging from 1 to 5, where m+n is less than or equal to 6.
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 4437-85-8, Butylene carbonate 27359-10-0, Trifluorotoluene

RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium battery to reduce overcharge
 and improve electrochem. characteristics)

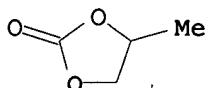
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



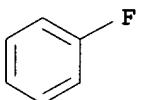
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



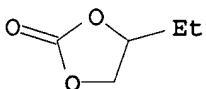
RN 462-06-6 HCAPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



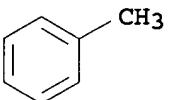
RN 4437-85-8 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 27359-10-0 HCAPLUS

CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M006-18

INCL 429307000; 429309000; 429326000; 429322000; 429323000; 429330000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium battery electrolyte overcharge lowering

IT Battery electrolytes

(electrolyte for lithium battery to reduce overcharge)

and improve electrochem. characteristics)

IT Secondary batteries
(lithium; **electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT Peroxides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(organic; **electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT Alcohols, uses
RL: MOA (Modifier or additive use); USES (Uses)
(trihydric; **electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT 3087-37-4, Tetrapropyltitanate
RL: CAT (Catalyst use); USES (Uses)
(**electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT 71-43-2, Benzene, uses 96-49-1, Ethylene carbonate
105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
108-88-3, Toluene, uses 462-06-6, Fluorobenzene
616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate
623-96-1, Dipropyl carbonate 1330-20-7, Xylene, uses
4437-85-8, Butylene carbonate 7447-41-8, Lithium chloride
(LiCl), uses 7791-03-9, Lithium perchlorate 10377-51-2, Lithium iodide (LiI) 12355-58-7, Lithium aluminate (Li₅AlO₄) 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 27359-10-0, Trifluorotoluene 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5, Lithium perfluorobutanesulfonate
RL: DEV (Device component use); USES (Uses)
(**electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT 126-58-9DP, Dipentaerythritol, reaction product with ϵ -caprolactone 502-44-3DP, ϵ -Caprolactone, reaction product with dipentaerythritol 609772-45-4P
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

IT 56-81-5, Glycerol, uses 67-71-0, Methyl sulfone 77-77-0, Vinyl sulfone 79-10-7D, Acrylic acid, ω -fatty acid **esters**
C2-C21 79-41-4D, Methacrylic acid, ω -fatty acid **esters** C2-C21 94-36-0, Benzoyl peroxide, uses 104-92-7, 4-Bromoanisole 105-64-6, Diisopropyl peroxy dicarbonate 105-74-8, Lauroyl peroxide 126-33-0, Tetramethylene sulfone 127-63-9, Phenyl sulfone 149-32-6, Erythritol 452-10-8, 2,4-Difluoroanisole 456-49-5, 3-Fluoroanisole 459-60-9, 4-Fluoroanisole 620-32-6, Benzyl sulfone 623-12-1, 4-Chloroanisole 1561-49-5, Dicyclohexyl peroxy dicarbonate 1712-87-4, m-Toluoyl peroxide 2398-37-0, 3-Bromoanisole 2845-89-8, 3-Chloroanisole 3006-82-4, tert-Butylperoxy-2-ethyl-hexanoate 14666-78-5 15520-11-3, Bis(4-tert-butylcyclohexyl)peroxy dicarbonate 28452-93-9, Butadiene sulfone 32752-09-3, Isobutyl peroxide 92177-99-6, 3,3,5-Trimethylhexanoyl peroxide 93343-10-3, 3,5-Difluoroanisole 202925-08-4, 3-Chloro-5-fluoroanisole 609365-67-5
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolyte** for lithium battery to reduce overcharge and improve electrochem. characteristics)

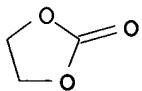
L56 ANSWER 22 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:656287 HCAPLUS
 DOCUMENT NUMBER: 139:182872
 TITLE: Polymer electrolyte for lithium secondary battery
 INVENTOR(S): Jung, Cheol-Soo; Kim, Ki-Ho; Bong, Cul-Hwen;
 Yang, Doo-Kyung; Lee, Kyoung-Hee; Lee, Yong-Beom; Lim, Hyun-Leong; Yamaguchi, Takitaro;
 Shimizu, Ryuichi
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 14 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003157411	A1	20030821	US 2002-287486	200211 05
KR 2003068714	A	20030825	KR 2002-8303	200202 16
JP 2003249264	A2	20030905	JP 2003-31544	200302 07
CN 1438727	A	20030827	CN 2003-103890	200302 14
PRIORITY APPLN. INFO.:			KR 2002-8303	A 200202 16
				<--

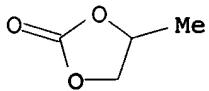
AB A solid polymer electrolyte, a lithium battery employing the same, and methods of forming the electrolyte and the lithium battery are disclosed. The polymer electrolyte includes polyester methacrylate having a polyester polyol moiety having three or more hydroxide (-OH) groups, at least one hydroxide group being substituted by a methacrylic ester group and at least one hydroxide group being substituted by a radical non-reactive group, or its polymer, a peroxide having 6-40 carbon atoms, and an electrolytic solution including a lithium salt and an organic solvent.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 108-90-7, Chlorobenzene, uses 646-06-0, Dioxolane 1072-47-5, 1,3-Dioxolane, 4-methyl 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (polymer electrolyte for lithium secondary battery)

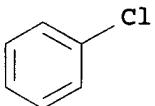
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



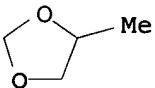
RN 108-90-7 HCAPLUS
 CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



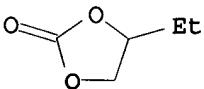
RN 646-06-0 HCAPLUS
 CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



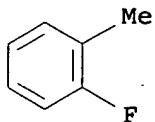
RN 1072-47-5 HCAPLUS
 CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



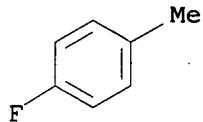
RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



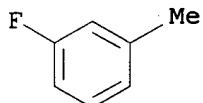
IT 95-52-3, 2-Fluorotoluene 352-32-9, 4-Fluorotoluene
 352-70-5, 3-Fluorotoluene 462-06-6, Benzene,
 fluoro-
 RL: MOA (Modifier or additive use); USES (Uses)
 (polymer electrolyte for lithium secondary battery)
 RN 95-52-3 HCAPLUS
 CN Benzene, 1-fluoro-2-methyl- (9CI) (CA INDEX NAME)



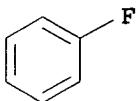
RN 352-32-9 HCPLUS
 CN Benzene, 1-fluoro-4-methyl- (9CI) (CA INDEX NAME)



RN 352-70-5 HCPLUS
 CN Benzene, 1-fluoro-3-methyl- (9CI) (CA INDEX NAME)



RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M010-04
 INCL 429317000; 429307000; 429316000; 029623100
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST polymer electrolyte lithium secondary battery
 IT Aromatic hydrocarbons, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (fluoro; polymer electrolyte for lithium secondary
 battery)
 IT Secondary batteries
 (lithium; polymer electrolyte for lithium secondary
 battery)
 IT Battery electrolytes
 Polymer electrolytes
 (polymer electrolyte for lithium secondary battery)
 IT Polyesters, uses
 RL: DEV (Device component use); USES (Uses)
 (polymer electrolyte for lithium secondary battery)
 IT 3087-37-4, Tetrapropyltitanate
 RL: CAT (Catalyst use); USES (Uses)

(polymer electrolyte for lithium secondary battery)
 IT 94-36-0, Benzoyl peroxide, processes 105-74-8, Lauroyl peroxide
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical
 process); PROC (Process)
 (polymer electrolyte for lithium secondary battery)
 IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,
 uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ -Butyrolactone 96-49-1, Ethylene carbonate
 98-95-3, Nitrobenzene, uses 100-47-0, Benzonitrile, uses
 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate
 108-90-7, Chlorobenzene, uses 109-99-9, Thf, uses
 110-71-4, 1,2-Dimethoxyethane 111-46-6, Diethylene glycol, uses
 115-10-6, Dimethyl ether 126-33-0, Sulfolane 127-19-5,
 Dimethylacetamide 542-52-9, Dibutyl carbonate 616-38-6, Dimethyl
 carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl
 carbonate 646-06-0, Dioxolane 872-36-6, Vinylene
 carbonate 1072-47-5, 1,3-Dioxolane, 4-methyl 1300-21-6,
 Dichloroethane 4437-85-8, Butylene carbonate 6482-34-4,
 Diisopropyl carbonate 7447-41-8, Lithium chloride (LiCl), uses
 7791-03-9, Lithium perchlorate 9002-88-4, Polyethylene
 9003-07-0, Polypropylene 10377-51-2, Lithium iodide (LiI)
 14024-11-4, Aluminum lithium chloride allicl4 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 30714-78-4, Ethyl butyl carbonate 33454-82-9,
 Lithium triflate 51729-83-0, Methyl isopropyl carbonate
 56525-42-9, Methyl propyl carbonate 90076-65-6 131651-65-5
 RL: DEV (Device component use); USES (Uses)
 (polymer electrolyte for lithium secondary battery)
 IT 95-52-3, 2-Fluorotoluene 352-32-9, 4-Fluorotoluene
 352-70-5, 3-Fluorotoluene 462-06-6, Benzene,
 fluoro- 581054-59-3D, mixed acrylic and pentanoic acid
 esters
 RL: MOA (Modifier or additive use); USES (Uses)
 (polymer electrolyte for lithium secondary battery)

L56 ANSWER 23 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2003:282015 HCPLUS
 DOCUMENT NUMBER: 138:274139
 TITLE: Nonaqueous electrolyte for lithium
 secondary battery
 INVENTOR(S): Kim, Jin-Sung; Hwang, Sang-Moon; Shimizu,
 Ryuichi; Yamaguchi, Takitaro; Paik, Meen-Seon;
 Lee, Jin-Wook; Jung, Cheol-Soo
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 15 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 2
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2003068562	A1	20030410	US 2002-119868	200204 09
				<--
US 7008728	B2	20060307		

JP 2002324577

A2

20021108

JP 2001-110350

200104
09

KR 2002085969

A

20021118

KR 2001-25537

200105
10

PRIORITY APPLN. INFO.:

JP 2001-110350

A

200104
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KR 2001-25537

A

200105
10

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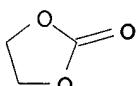
OTHER SOURCE(S): MARPAT 138:274139

AB An **electrolyte** for a lithium secondary battery is provided. The **electrolyte** includes a lithium salt, a non-aqueous organic **solvent**, and a compound represented by Formula R1(R2)C=C(R3)-CN : wherein R1, R2, and R3 are each independently selected from the group consisting of hydrogen, primary, secondary, and tertiary alkyl groups, alkenyl groups, and aryl groups. The compound of the present invention is decomposed earlier than an **electrolytic organic solvent**, and an organic SEI film is formed on a neg. electrode, thereby inhibiting the **electrolytic organic solvent** from decomposing

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 4437-85-8, Butylene carbonate
RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** for lithium secondary battery)

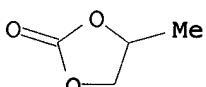
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



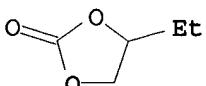
RN 108-32-7 HCPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 4437-85-8 HCPLUS

CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)

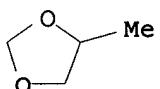


IT 646-06-0, Dioxolane 1072-47-5, 1,3-Dioxolane,
4-Methyl

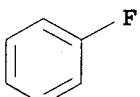
RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** for lithium secondary battery)
 RN 646-06-0 HCAPLUS
 CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



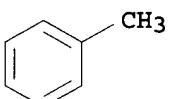
RN 1072-47-5 HCAPLUS
 CN 1,3-Dioxolane, 4-methyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



IT 462-06-6, Fluorobenzene 27359-10-0,
 Trifluorotoluene
 RL: TEM (Technical or engineered material use); USES (Uses)
 (solvent; nonaq. **electrolyte** for lithium
 secondary battery)
 RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 27359-10-0 HCAPLUS
 CN Benzene, methyl-, trifluoro deriv. (9CI) (CA INDEX NAME)



3 (D1-F)

IC ICM H01M010-40
 INCL 429326000; X42-933.9; X42-933.0; X42-933.1; X42-933.2
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST nonaq **electrolyte** lithium secondary battery
 IT Secondary batteries
 (lithium; nonaq. **electrolyte** for lithium secondary
 battery)
 IT Battery **electrolytes**
 (nonaq. **electrolyte** for lithium secondary battery)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate

623-53-0, Methyl ethyl carbonate 623-96-1, Dipropyl carbonate
 4437-85-8, Butylene carbonate 7439-93-2, Lithium, uses
 7447-41-8, Lithium chloride, uses 7791-03-9, Lithium perchlorate
 10377-51-2, Lithium iodide 12190-79-3, Cobalt lithium oxide colio2
 14024-11-4, Lithium tetrachloroaluminate 14283-07-9, Lithium
 tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate
 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
 Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate
 90076-65-6 131651-65-5, Lithium perfluorobutanesulfonate
 RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 75-05-8, Acetonitrile,
 uses 96-47-9, 2-Methyltetrahydrofuran 96-48-0,
 γ -Butyrolactone 100-47-0, Benzonitrile, uses 107-13-1,
 Acrylonitrile, uses 109-99-9, Thf, uses 110-71-4,
 1,2-Dimethoxyethane 111-46-6, Diethylene glycol, uses 115-10-6,
 Dimethyl ether 123-91-1, Dioxane, uses 126-33-0,
 Sulfolane 126-98-7, Methacrylonitrile 127-19-5, Dimethyl
 acetamide 646-06-0, Dioxolane 1072-47-5,
 1,3-Dioxolane, 4-Methyl 1300-21-6, Dichloroethane 25721-76-0,
 Polyethylene glycol dimethacrylate 26570-48-9, Polyethylene glycol
 diacrylate 27236-41-5, Pentenenitrile 99839-14-2 503294-55-1
 RL: MOA (Modifier or additive use); USES (Uses)

(nonaq. electrolyte for lithium secondary battery)

IT 71-43-2, Benzene, uses 108-88-3, Toluene, uses 462-06-6,
 Fluorobenzene 1330-20-7, Xylene, uses 27359-10-0,
 Trifluorotoluene

RL: TEM (Technical or engineered material use); USES (Uses)
 (solvent; nonaq. electrolyte for lithium
 secondary battery)

REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L56 ANSWER 24 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:638177 HCPLUS
 DOCUMENT NUMBER: 137:188207
 TITLE: Polymer electrolytes for lithium
 secondary battery with improved safety
 INVENTOR(S): Lee, Yong-Boom; Jung, Chool-Soo; Lee, Kyoung-Hee
 PATENT ASSIGNEE(S): Samsung Sdi Co., Ltd., S. Korea
 SOURCE: U.S. Pat. Appl. Publ., 14 pp.
 CODEN: USXXCO
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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US 2002114997	A1	20020822	US 2002-36465	200201 07
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US 6833219	B2	20041221		
KR 2002057569	A	20020711	KR 2001-667	200101 05

CN 1384125 A 20021211 CN 2002-106465
200201
05

JP 2002289255 A2 20021004 JP 2002-877
200201
07

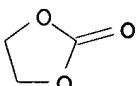
PRIORITY APPLN. INFO.: KR 2001-667 A
200101
05

AB A polymer **electrolyte** for use in a lithium secondary battery prepared by polymerizing a composition including 0.1 to 90% by weight of a first compound represented by formula 1, a second compound represented by formula 2 or a mixture thereof, 0.1 to 90% by weight of a third compound represented by formula 3, and 9.8 to 99.8% by weight of a nonaq. organic solvent containing 0.5 to 2.0M of a lithium salt. Formula 1 is $\text{CH}(\text{R1})=\text{C}(\text{R2})-\text{C}(=\text{O})\text{O}-\text{R3}-\text{N}(\text{R4})(\text{R5})$, formula 2 is $\text{CH}(\text{R1})=\text{C}(\text{R2})-\text{C}(=\text{O})\text{O}-\text{R3}-\text{CN}$, and formula 3 is $\text{Z}-\{-\text{Y}-\text{X}-\text{C}(\text{R2})=\text{CH}(\text{R1})\}_n$.

IT 96-49-1, Ethylene carbonate 462-06-6,
Fluorobenzene 27858-05-5, DiFluorobenzene
RL: DEV (Device component use); USES (Uses)
(polymer **electrolytes** for lithium secondary battery
with improved safety)

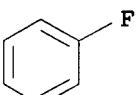
RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 462-06-6 HCPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



RN 27858-05-5 HCPLUS

CN Benzene, difluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



2 (D1-F)

IC ICM H01M010-40

INCL 429314000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 38
 ST polymer electrolyte lithium secondary battery improved
 safety; safety lithium secondary battery polymer electrolyte
 IT Polymerization
 (electron beam-induced; polymer electrolytes for
 lithium secondary battery with improved safety)
 IT Polymer electrolytes
 (gel-type; polymer electrolytes for lithium secondary
 battery with improved safety)
 IT Secondary batteries
 (lithium; polymer electrolytes for lithium secondary
 battery with improved safety)
 IT Esters, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (peroxy; polymer electrolytes for lithium secondary
 battery with improved safety)
 IT Polymerization
 (photopolymn.; polymer electrolytes for lithium
 secondary battery with improved safety)
 IT Battery electrolytes
 Safety
 (polymer electrolytes for lithium secondary battery
 with improved safety)
 IT Carbon fibers, uses
 RL: DEV (Device component use); USES (Uses)
 (polymer electrolytes for lithium secondary battery
 with improved safety)
 IT Polymerization
 (thermal; polymer electrolytes for lithium secondary
 battery with improved safety)
 IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-58-8, Diethyl carbonate 112-49-2, Triglyme 143-24-8,
 Tetruglyme 462-06-6, Fluorobenzene 623-53-0, Ethyl
 methyl carbonate 872-36-6, Vinylene carbonate 7791-03-9, Lithium
 perchlorate 9002-88-4, Polyethylene 9003-07-0, Polypropylene
 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium
 tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
 27858-05-5, DiFluorobenzene 29935-35-1, Lithium
 hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6
 449158-98-9 449158-99-0 449159-00-6 449159-01-7
 RL: DEV (Device component use); USES (Uses)
 (polymer electrolytes for lithium secondary battery
 with improved safety)
 IT 78-67-1, Azobisisobutyronitrile 94-36-0, Benzoyl peroxide, uses
 105-74-8, Lauroyl peroxide 110-22-5, Diacetyl peroxide 119-61-9,
 Benzophenone, uses 2094-98-6 2372-21-6, tert-Butyl peroxy
 isopropyl carbonate 4419-11-8 4511-39-1, tert-Amyl
 peroxybenzoate 34443-12-4, tert-Butyl peroxy 2-ethylhexyl
 carbonate
 RL: MOA (Modifier or additive use); USES (Uses)
 (polymer electrolytes for lithium secondary battery
 with improved safety)

REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
 THIS RECORD. ALL CITATIONS AVAILABLE IN
 THE RE FORMAT

L56 ANSWER 25 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2002:84081 HCAPLUS

DOCUMENT NUMBER: 136-137403
 TITLE: Electrolyte for a lithium-sulfur
 battery
 INVENTOR(S): Hwang, Duckchul; Choi, Yunsuk; Choi, Sooseok;
 Lee, Jeawoan; Jung, Yongju; Kim, Joosoak
 PATENT ASSIGNEE(S): Samsung SDI Co. Ltd., S. Korea
 SOURCE: Eur. Pat. Appl., 7 pp.
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

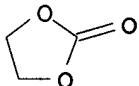
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
EP 1176659	A2	20020130	EP 2001-117661	200107 25
EP 1176659	A3	20060531		<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
KR 2002008704	A	20020131	KR 2000-42736	200007 25
KR 2002008705	A	20020131	KR 2000-42737	200007 25
JP 2002075447	A2	20020315	JP 2001-213435	200107 13
US 2002102466	A1	20020801	US 2001-910952	200107 24
CN 1335653	A	20020213	CN 2001-132526	200107 25
PRIORITY APPLN. INFO.:		KR 2000-42736	A	200007 25
		KR 2000-42737	A	200007 25

AB An electrolyte for a lithium-sulfur battery has a solvent having a dielec. constant that is greater than or equal to 20, a solvent having a viscosity that is less than or equal to 1.3, and an electrolyte salt. This battery shows excellent capacity and cycle life characteristics.
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 462-06-6, Fluorobenzene 646-06-0, 1,3-Dioxolane 3741-38-6, Ethylene sulfite 25496-08-6, Fluorotoluene

RL: DEV (Device component use); USES (Uses)
(electrolyte for lithium-sulfur battery)

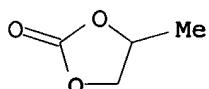
RN 96-49-1 HCAPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



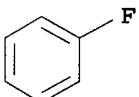
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 462-06-6 HCAPLUS

CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



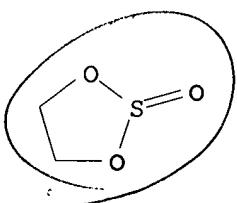
RN 646-06-0 HCAPLUS

CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 3741-38-6 HCAPLUS

CN 1,3,2-Dioxathiolane, 2-oxide (9CI) (CA INDEX NAME)



RN 25496-08-6 HCAPLUS

CN Benzene, fluoromethyl- (9CI) (CA INDEX NAME)



D1-F

D1-Me

IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST **electrolyte** lithium sulfur battery
 IT **Battery electrolytes**
 (electrolyte for lithium-sulfur battery)
 IT Secondary batteries
 (lithium; **electrolyte** for lithium-sulfur battery)
 IT 60-29-7, Ethyl ether, uses 64-17-5, Ethanol, uses
 67-56-1, Methanol, uses 67-63-0, Isopropanol, uses 67-68-5,
 Dmso, uses 68-12-2, Dmf, uses 71-43-2, Benzene, uses 75-05-8,
 Acetonitrile, uses 78-93-3, Methyl ethyl ketone, uses
 79-20-9, Methyl acetate 96-47-9, 2-Methyltetrahydrofuran
 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 105-37-3, Ethyl propionate 105-58-8, Diethyl carbonate 107-31-3,
 Methyl formate 108-32-7, Propylene carbonate 109-60-4,
 n-Propyl acetate 109-99-9, Thf, uses 110-71-4,
 1,2-Dimethoxyethane 110-82-7, Cyclohexane, uses 110-86-1,
 Pyridine, uses 111-96-6, Diglyme 123-91-1, p-Dioxane, uses
 126-33-0, Sulfolane 141-78-6, Ethyl acetate, uses 420-12-2,
 Ethylene sulfide 462-06-6, Fluorobenzene 554-12-1,
 Methyl propionate 616-38-6, Dimethyl carbonate 623-53-0,
 Ethylmethyl carbonate 646-06-0, 1,3-Dioxolane 680-31-9,
 Hexamethylphosphoramide, uses 822-38-8, Ethylene trithiocarbonate
 872-36-6, Vinylene carbonate 930-35-8, Vinylene trithiocarbonate
 3741-38-6, Ethylene sulfite 7704-34-9, Sulfur, uses
 7791-03-9, Lithium perchlorate 14283-07-9, Lithium
 tetrafluoroborate 16508-95-5, Bismuth carbonate 21324-40-3,
 Lithium hexafluorophosphate 25496-08-6, Fluorotoluene
 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium
 triflate 74432-42-1, Lithium polysulfide 90076-65-6
 RL: DEV (Device component use); USES (Uses)
 (electrolyte for lithium-sulfur battery)

L56 ANSWER 26 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:692247 HCPLUS
 DOCUMENT NUMBER: 135:229393
 TITLE: Organic **electrolyte** solutions and
 secondary lithium batteries using the solutions
 INVENTOR(S): Hwang, Duk Chul; Kim, Ki Kyug; Kang, Seung Gyun;
 Lee, Se Wan; Lee, Yong Beum; Han, Se Jong; Lee,
 In Sung
 PATENT ASSIGNEE(S): Samsung SDI Co., Ltd., S. Korea
 SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

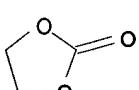
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001256996	A2	20010921	JP 2001-13042	200101 22
KR 2001086991	A	20010915	KR 2000-11041	200003 06
US 2001024757	A1	20010927	US 2001-768298	200101 25
US 6497980	B2	20021224	KR 2000-11041	A 200003 06

PRIORITY APPLN. INFO.: AB The electrolyte solns. contain a Li salt and an organic solvent mixture containing ethylene carbonate 20-60, dialkyl carbonate 20-70, and fluorotoluene 5-30 volume%.

IT 96-49-1, Ethylene carbonate
RL: DEV (Device component use); USES (Uses)
(solvent mixts. containing carbonate esters and fluorotoluene for secondary lithium battery electrolytes)

RN 96-49-1 HCAPLUS

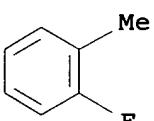
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 95-52-3, 2-Fluorotoluene 352-32-9, 4-Fluorotoluene
RL: MOA (Modifier or additive use); USES (Uses)
(solvent mixts. containing carbonate esters and fluorotoluene for secondary lithium battery electrolytes)

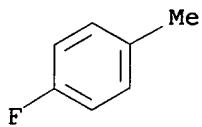
RN 95-52-3 HCAPLUS

CN Benzene, 1-fluoro-2-methyl- (9CI) (CA INDEX NAME)



RN 352-32-9 HCAPLUS

CN Benzene, 1-fluoro-4-methyl- (9CI) (CA INDEX NAME)



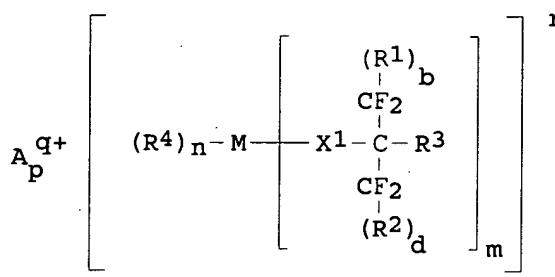
IC H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery **electrolyte** carbonate
 ester fluorotoluene
 IT Battery **electrolytes**
 (solvent mixts. containing carbonate **esters** and
 fluorotoluene for secondary lithium battery **electrolytes**
)
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
 616-38-6, Dimethyl carbonate 21324-40-3, Lithium
 hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (solvent mixts. containing carbonate **esters** and
 fluorotoluene for secondary lithium battery **electrolytes**
)
 IT 95-52-3, 2-Fluorotoluene 352-32-9, 4-Fluorotoluene
 RL: MOA (Modifier or additive use); USES (Uses)
 (solvent mixts. containing carbonate **esters** and
 fluorotoluene for secondary lithium battery **electrolytes**
)

L56 ANSWER 27 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:377210 HCAPLUS
 DOCUMENT NUMBER: 134:369424
 TITLE: **Electrolyte** solutions for batteries
 and capacitors
 INVENTOR(S): Tsujioka, Shoichi; Takase, Hirohige; Takahashi,
 Mikihiro
 PATENT ASSIGNEE(S): Central Glass Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2001143750	A2	20010525	JP 1999-323490	199911 15

JP 3463926	B2	20031105	JP 1999-323490	199911 15
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OTHER SOURCE(S): MARPAT 134:369424
 GI



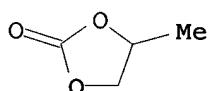
AB The electrolyte solns. contain a complex electrolyte, having C-F bonding containing ligand in its anion, dissolved in a F containing organic solvent. The complex is preferably I, where Aq^+ = metal ion or onium ion; M = transition metal or Group III-V element; a = 0-3, c = 0-3, $(a+b) = 3$ and $(d+e) = 3$ when a or c >0; p = r/q, q = 1-3, r = 1-3; m = 0-8, n = 0-8; $X_1 = O, S, NR_5$, or NR_5R_6 ; R1 and R2 = H, halogen, or C1-10 (halogenated) alkyl; R3 = C1-10 (halogenated) alkyl or C4-20 (halogenated) aryl; R4 = halogen, C1-10 (halogenated) alkyl, C4-20 (halogenated) aryl, or X_2R_7 ; $X_2 = O, S, NR_5$, or NR_5R_6 ; R5 and R6 = H or C1-10 alkyl; and R7 = C1-10 (halogenated) alkyl or C4-20 (halogenated) aryl. M is preferably Al, B, V, Ti, Si, Zr, Ge, Sn, Cu, Y, Zn, Ga, Nb, Ta, Bi, P, As, Sc, Hf, or Sb; and Aq^+ is Li⁺ or quaternary ammonium ion.

IT 108-32-7, Propylene carbonate 392-56-3,
Hexafluorobenzene 1765-26-0, 2,2-Bis(trifluoromethyl)-1,3-dioxolane

RL: DEV (Device component use); USES (Uses)
(electrolyte solns. containing lithium salts with C-F bonding containing anion in fluoro organic solvents for batteries and capacitors)

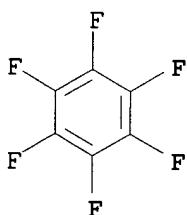
RN 108-32-7 HCAPLUS

CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 392-56-3 HCAPLUS

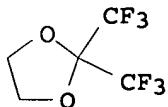
CN Benzene, hexafluoro- (6CI, 8CI, 9CI) (CA INDEX NAME)



RN 1765-26-0 HCAPLUS

CN 1,3-Dioxolane, 2,2-bis(trifluoromethyl)- (6CI, 7CI, 8CI, 9CI) (CA)

INDEX NAME)



IC ICM H01M010-40
 ICS H01G009-038; H01M006-16
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST battery electrolyte lithium fluorocarbon complex salt;
 capacitor electrolyte lithium fluorocarbon complex salt
 IT Capacitors
 (double layer; electrolyte solns. containing lithium salts
 with C-F bonding containing anion in fluoro organic solvents
 for batteries and capacitors)
 IT Battery electrolytes
 (electrolyte solns. containing lithium salts with C-F
 bonding containing anion in fluoro organic solvents for
 batteries and capacitors)
 IT 108-32-7, Propylene carbonate 392-56-3,
 Hexafluorobenzene 616-38-6, Dimethyl carbonate 1765-26-0
 , 2,2-Bis(trifluoromethyl)-1,3-dioxolane 18925-66-1 163702-07-6,
 Methyl nonafluorobutyl ether 181061-04-1 220836-34-0
 330939-05-4
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing lithium salts with C-F
 bonding containing anion in fluoro organic solvents for
 batteries and capacitors)

L56 ANSWER 28 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:185833 HCPLUS
 DOCUMENT NUMBER: 134:223194
 TITLE: Ionically conductive polymers containing boron
 atoms useful for polymer electrolytes
 and electrical devices
 INVENTOR(S): Nishiura, Masahito; Kono, Michiyuki; Watanabe,
 Masayoshi
 PATENT ASSIGNEE(S): Dai-Ichi Kogyo Seiyaku Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 58 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2001018094	A1	20010315	WO 2000-JP5811	200008 28

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W: CA, US
 RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
 NL, PT, SE
 JP 2001072875 A2 20010321 JP 1999-248887
 199909

02

JP 3557959 B2 20040825 <--
 JP 2001072876 A2 20010321 JP 1999-248888 199909
 02

JP 3557960 B2 20040825 <--
 JP 2001072877 A2 20010321 JP 1999-248889 199909
 02

JP 3557961 B2 20040825 <--
 JP 2001131246 A2 20010515 JP 1999-318000 199911
 09

CA 2344204 AA 20010315 CA 2000-2344204 200008
 28

EP 1160268 A1 20011205 EP 2000-955080 200008
 28

EP 1160268 B1 20040804 <--
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
 PT, IE, FI

EP 1428849 A1 20040616 EP 2004-2946 200008
 28

EP 1428849 B1 20060405 <--
 R: DE, FR, IT

EP 1428850 A1 20040616 EP 2004-2947 200008
 28

EP 1428850 B1 20050504 <--
 R: DE, FR, IT

US 2004202912 A1 20041014 US 2004-835816 200404
 30

US 7045242 B2 20060516 JP 1999-248887 A 199909
 PRIORITY APPLN. INFO.: <-- 02

<-- JP 1999-248888 A 199909
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<-- JP 1999-248889 A 199909
 <-- 02

<-- JP 1999-318000 A 199911
 <-- 09

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 EP 2000-955080 A3 200008
 28
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 WO 2000-JP5811 W 200008
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 US 2001-787233 B1 200104
 25

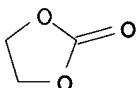
AB The polymers are of the following types: (1) a dendrimer-like polymer having trivalent B atom at core and wedge point, a heteroatom such as O as linking unit (L), and di- to hexavalent group with mol. weight of ≥ 150 linking to the B atom via L, (2) a compound obtained by crosslinking of a multiarm polymer of $B(XRY)_3$ type [X = heteroatom; R = divalent group having mol. weight of > 150 (e.g., polyoxyethylene group); Y = polymerizable functional group], (3) a high-mol. compound bearing B atom preferably on side chain end or main chain end, and (4) high-mol. compound containing tetravalent B. The polymer **electrolytes** with improved charge-carrying ion capacities are obtained by mixing one or more types of the polymers above with an **electrolyte** salt such as a lithium salt and an aprotic **solvent**, e.g., carbonates, lactones, **ether**, etc., and can be used in batteries or capacitors. Thus, coupling a diol derived from ethylene oxide ring opening reaction with borane gave a 3-arm polymer, 1 g of which was combined with LiBF₄ at 1 mol/kg and 2.3 g γ -butyrolactone and cast coated on a glass surface to give a film of polymer **electrolyte**.

IT 96-49-1, Ethylene carbonate 646-06-0,
 1,3-Dioxolane

RL: NUU (Other use, unclassified); USES (Uses)
 (aprotic **solvent**; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

RN 96-49-1 HCPLUS

CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



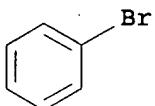
RN 646-06-0 HCPLUS
CN 1,3-Dioxolane (6CI, 8CI, 9CI) (CA INDEX NAME)



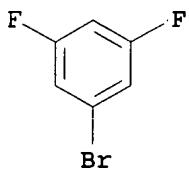
IT 108-86-1DP, Bromobenzene, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 461-96-1DP, 3,5-Difluorobromobenzene, reaction products with borane and monoalkenyl-terminated

polyoxyalkylenes, lithium complexes, anion-containing
 RL: DEV (Device component use); IMF (Industrial manufacture); POF
 (Polymer in formulation); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (manufacture of B-containing ionically conductive polymers useful for
 polymeric **electrolytes** and elec. devices)

RN 108-86-1 HCAPLUS
 CN Benzene, bromo- (8CI, 9CI) (CA INDEX NAME)



RN 461-96-1 HCAPLUS
 CN Benzene, 1-bromo-3,5-difluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM C08G079-08
 ICS H01B001-06; H01M006-18; H01M010-40
 CC 35-7 (Chemistry of Synthetic High Polymers)
 Section cross-reference(s): 52, 76
 ST boron core dendrimer like conductive polymer **electrolyte**;
 aprotic solvent polymer **electrolyte** boron contg
 polymer; battery manuf polymer **electrolyte** boron contg
 polymer; capacitor manuf polymer **electrolyte** boron contg
 polymer; polyoxyethylene borane adduct multiarm polymer
electrolyte; star block borane polyoxyethylene adduct
 polymer **electrolyte**; starburst borane polyoxyethylene
 adduct polymer **electrolyte**
 IT Polyoxyalkylenes, preparation
 RL: DEV (Device component use); IMF (Industrial manufacture); POF
 (Polymer in formulation); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (acrylic, boron-containing multiarm or dendritic, crosslinked; manufacture
 of B-containing ionically conductive polymers useful for polymeric
electrolytes and elec. devices)
 IT Polyoxyalkylenes, preparation
 RL: DEV (Device component use); IMF (Industrial manufacture); POF
 (Polymer in formulation); PRP (Properties); TEM (Technical or
 engineered material use); PREP (Preparation); USES (Uses)
 (boron-containing multiarm or dendritic, crosslinked; manufacture of
 B-containing ionically conductive polymers useful for polymeric
electrolytes and elec. devices)
 IT Capacitors
 Secondary batteries
 (lithium ion; manufacture of B-containing ionically conductive polymers
 useful for polymeric **electrolytes** and elec. devices)
 IT Conducting polymers
 Polymer **electrolytes**

(manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT Dendritic polymers
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT Boranes
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (reaction products with monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 329687-70-9DP, lithium complexes, anion-containing
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (3-arm; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 7447-41-8, Lithium chloride, uses 7550-35-8, Lithium bromide
 7789-24-4, Lithium fluoride, uses 7791-03-9, Lithium perchlorate
 10377-51-2, Lithium iodide 14283-07-9, Lithium tetrafluoroborate (LiBF₄) 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6 132404-42-3 132843-44-8
 RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
 (B-containing multiarm or dendritic polyoxyalkylene polymer complexes; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 96-48-0, γ -Butyrolactone 96-49-1, Ethylene carbonate
 110-71-4, 1,2-Dimethoxyethane 126-33-0, Sulfolane 646-06-0
 , 1,3-Dioxolane
 RL: NUU (Other use, unclassified); USES (Uses)
 (aprotic solvent; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 329352-15-0DP, lithium complexes, anion-containing
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (comb, dendritic; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 329352-19-4DP, lithium complexes, bromate- or chlorate-containing
 329352-20-7DP, lithium complexes, hexafluoroarsenate-containing
 329352-21-8DP, lithium complexes, anion-containing
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (dendritic, from divergent approach; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 329352-16-1DP, lithium complexes, anion-containing 329352-17-2DP, lithium complexes, anion-containing 329352-18-3DP, lithium complexes, anion-containing 329352-22-9DP, lithium complexes, tetrafluoroborate-containing 329352-23-0DP, lithium complexes,

hexafluorophosphate-containing

RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(dendritic; manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 67-56-1DP, Methanol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing, preparation 100-02-7DP, p-Nitrophenol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 108-86-1DP, Bromobenzene, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 108-95-2DP, Phenol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing, preparation 109-86-4DP, Ethylene glycol monomethyl **ether**, boron derives., lithium complexes, anion-containing 111-87-5DP, Octanol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 120-80-9DP, Catechol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 461-96-1DP, 3,5-Difluorobromobenzene, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 518-05-8DP, 1,8-Naphthalenedicarboxylic acid, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 1806-29-7DP, Biphenyl-2,2'-diol, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 26570-48-9DP, Polyethylene glycol diacrylate, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 50986-11-3DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 77716-60-0DP, Polyethylene glycol monovinyl **ether**, boron derives., lithium complexes, anion-containing 328312-85-2DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329687-75-4DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329687-76-5DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329687-77-6DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329687-79-8DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329687-80-1DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329688-10-0DP, boron derives., lithium complexes, anion-containing 329688-12-2DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing 329688-13-3DP, polymer with boron-containing alkenyl-terminated polyoxyalkylenes, lithium complexes, anion-containing

RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(manufacture of B-containing ionically conductive polymers useful for polymeric **electrolytes** and elec. devices)

IT 75-89-8DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 141-82-2DP, Malonic acid, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 771-61-9DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 920-66-1DP, reaction products with borane and monoalkenyl-terminated

polyoxyalkylenes, lithium salts 2378-02-1DP, reaction products with borane and monoalkenyl-terminated polyoxyalkylenes, lithium salts 329358-74-9P 329358-75-0P 329358-76-1P 329687-86-7DP, boron derives., lithium containing 329688-14-4P 329688-15-5P
 RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(manufacture of B-containing ionically conductive polymers useful for polymeric electrolytes and elec. devices)

IT 9051-31-4D, Polyethylene glycol monoacrylate homopolymer, lithium complexes, anion-containing

RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(multiarm; manufacture of B-containing ionically conductive polymers useful for polymeric electrolytes and elec. devices)

IT 26403-58-7DP, Polyethylene glycol monoacrylate, boron derives., lithium complexes, anion-containing 329420-45-6DP, Polypropylene glycol monomethacrylate, boron derives., lithium complexes, anion-containing 329687-72-1DP, boron derives., lithium complexes, anion-containing 329687-74-3DP, boron derives., lithium complexes, anion-containing
 RL: DEV (Device component use); IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(optionally 3-arm; manufacture of B-containing ionically conductive polymers useful for polymeric electrolytes and elec. devices)

IT 329687-81-2DP, boron derives., lithium containing 329687-82-3DP, boron derives., lithium containing 329687-83-4DP, boron derives., lithium containing 329688-16-6DP, boron derives., lithium containing
 RL: DEV (Device component use); IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(optionally 3-arm; manufacture of B-containing ionically conductive polymers useful for polymeric electrolytes and elec. devices)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L56 ANSWER 29 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2001:31797 HCAPLUS
 DOCUMENT NUMBER: 134:88833
 TITLE: Nonaqueous electrolyte composition for batteries
 INVENTOR(S): Kim, Jong Seob; Kim, Young Gyu; Chang, Tu Won; Kim, Kwang Sik; Kim, Jin Sung; Ahn, Ky Hoon
 PATENT ASSIGNEE(S): Cheil Industries Inc., S. Korea; Samsung SDI Co., Ltd.
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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WO 2001003229	A1	20010111	WO 1999-KR811	199912

24

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W: CN, JP, US

RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC,
NL, PT, SE

KR 2001008488 A 20010205 KR 1999-26358

199907
01

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EP 1125338 A1 20010822 EP 1999-963685

199912
24

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R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC,
PT, IE, FI
JP 2003504812 T2 20030204 JP 2001-508534199912
24

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TW 461135 B 20011021 TW 2000-89103205

200002
23

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US 6855458 B1 20050215 US 2001-786012

200102
26

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PRIORITY APPLN. INFO.: KR 1999-26358 A

199907
01

<--

WO 1999-KR811 W

199912
24

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OTHER SOURCE(S): MARPAT 134:88833

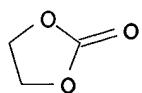
AB Disclosed is a nonaq. **electrolyte** composition for batteries, which is composed of a mixture of a fluorobenzene component and a carbonic acid **ester** component in which the volume ratio of the fluorobenzene component to the carbonic acid **ester** component ranges from 50:50 to 5:95. The nonaq. **electrolyte** composition has a significant advantage over **electrolyte** compns. employing carbonic acid **ester solvents** only, in terms of low temperature performance, cell life, and high-temperature dischargeability.

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 367-11-3, 1,2-DiFluorobenzene 367-23-7, 1,2,4-Trifluorobenzene 372-18-9, 1,3-DiFluorobenzene 462-06-6, Fluorobenzene 540-36-3, 1,4-DiFluorobenzene 4437-85-8, Butylene carbonate 27858-05-5, DiFluorobenzene

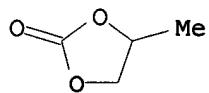
RL: DEV (Device component use); USES (Uses)
(nonaq. **electrolyte** composition for lithium secondary batteries)

RN 96-49-1 HCPLUS

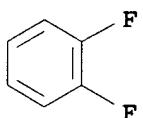
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



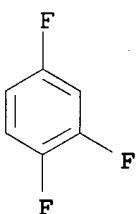
RN 108-32-7 HCPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



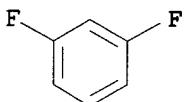
RN 367-11-3 HCPLUS
 CN Benzene, 1,2-difluoro- (9CI) (CA INDEX NAME)



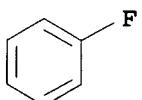
RN 367-23-7 HCPLUS
 CN Benzene, 1,2,4-trifluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 372-18-9 HCPLUS
 CN Benzene, 1,3-difluoro- (9CI) (CA INDEX NAME)

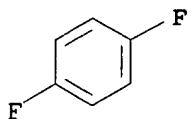


RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



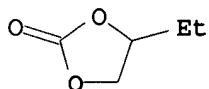
RN 540-36-3 HCPLUS

CN Benzene, 1,4-difluoro- (9CI) (CA INDEX NAME)



RN 4437-85-8 HCPLUS

CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



RN 27858-05-5 HCPLUS

CN Benzene, difluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



2 (D1-F)

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST battery electrolyte fluorobenzene carbonic acid
esterIT Secondary batteries
(lithium; nonaq. electrolyte composition for lithium
secondary batteries)IT Battery electrolytes
(nonaq. electrolyte composition for lithium secondary
batteries)IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
108-32-7, Propylene carbonate 367-11-3,
1,2-DiFluorobenzene 367-23-7, 1,2,4-Trifluorobenzene
372-18-9, 1,3-DiFluorobenzene 462-06-6,
Fluorobenzene 540-36-3, 1,4-DiFluorobenzene 616-38-6,
Dimethyl carbonate 623-53-0, Ethylmethyl carbonate 623-96-1,
Dipropyl carbonate 4437-85-8, Butylene carbonate
7791-03-9, Lithium perchlorate 14283-07-9, Lithium
tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate
27858-05-5, DiFluorobenzene 29935-35-1, Lithium
hexafluoroarsenate 33454-82-9, Lithium triflate 35363-40-7,
Ethylpropyl carbonate 56525-42-9, Methylpropyl carbonate
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolyte composition for lithium secondary
batteries)REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L56 ANSWER 30 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:739739 HCAPLUS

DOCUMENT NUMBER: 133:323949

TITLE: Nonaqueous electrolyte solutions and
secondary nonaqueous electrolyte
batteries

INVENTOR(S): Hayashi, Takeshi

PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

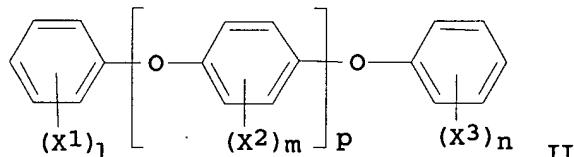
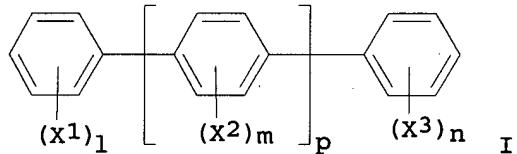
LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000294279	A2	20001020	JP 1999-95968	199904 02

PRIORITY APPLN. INFO.: JP 1999-95968

199904
02OTHER SOURCE(S): MARPAT 133:323949
GI

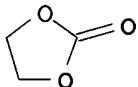
AB The electrolyte solns. have an electrolyte and a nonaq. solvent containing aromatic compds. I or II, where X1-3 = F, Cl, ROCO-, RCO2-, or ROCO2- groups (R = C1-10 hydrocarbon group which may contain oxy group), 1 and n = 0-5 integer, m = 0-4 integer, 1+m+n ≤ 14, and p = 0-5 integer. The solvent may also contain cyclic carbonate esters, e.g., ethylene carbonate and vinylene carbonate which may have C1-10 alkyl group and F, Cl, or Br substituents on the alkyl group, and linear C1-10 dialkyl carbonate esters which may have F, Cl, or Br substituents on the C1-10 alkyl groups. The batteries are secondary Li batteries.

IT 96-49-1, Ethylene carbonate
RL: DEV (Device component use); USES (Uses)

(nonaq. electrolyte solns. containing aromatic compds. for
secondary lithium batteries)

RN 96-49-1 HCPLUS

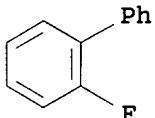
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



IT 321-60-8, 2-Fluorobiphenyl 324-74-3,
4-Fluorobiphenyl 398-22-1 398-23-2,
4,4'-Difluorobiphenyl 2051-62-9, 4-Chlorobiphenyl
RL: MOA (Modifier or additive use); USES (Uses)
(nonaq. electrolyte solns. containing aromatic compds. for
secondary lithium batteries)

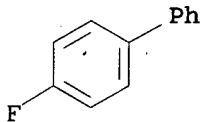
RN 321-60-8 HCPLUS

CN 1,1'-Biphenyl, 2-fluoro- (9CI) (CA INDEX NAME)



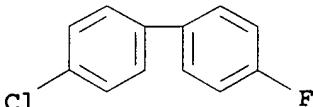
RN 324-74-3 HCPLUS

CN 1,1'-Biphenyl, 4-fluoro- (9CI) (CA INDEX NAME)



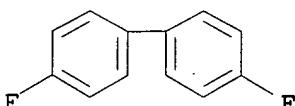
RN 398-22-1 HCPLUS

CN 1,1'-Biphenyl, 4-chloro-4'-fluoro- (9CI) (CA INDEX NAME)



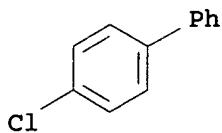
RN 398-23-2 HCPLUS

CN 1,1'-Biphenyl, 4,4'-difluoro- (9CI) (CA INDEX NAME)



RN 2051-62-9 HCPLUS

CN 1,1'-Biphenyl, 4-chloro- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M004-48; H01M004-58
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery **electrolyte solvent**
 arom compd
 IT **Battery electrolytes**
 (nonaq. **electrolyte** solns. containing aromatic compds. for
 secondary lithium batteries)
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate
 21324-40-3, Lithium hexafluorophosphate
 RL: DEV (Device component use); USES (Uses)
 (nonaq. **electrolyte** solns. containing aromatic compds. for
 secondary lithium batteries)
 IT 321-60-8, 2-Fluorobiphenyl 324-74-3,
 4-Fluorobiphenyl 330-84-7, 4-Fluorophenyl phenyl **ether**
 330-93-8 398-22-1 398-23-2, 4,4'-
 Difluorobiphenyl 720-75-2, 4-Methoxycarbonylbiphenyl
 2051-62-9, 4-Chlorobiphenyl 7005-72-3, 4-Chlorophenyl
 phenyl **ether** 19082-52-1 21218-94-0 137739-26-5
 RL: MOA (Modifier or additive use); USES (Uses)
 (nonaq. **electrolyte** solns. containing aromatic compds. for
 secondary lithium batteries)

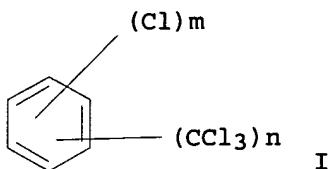
L56 ANSWER 31 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:551377 HCPLUS
 DOCUMENT NUMBER: 133:166219
 TITLE: Nonaqueous **electrolyte** solutions and
 secondary nonaqueous-**electrolyte**
 batteries
 INVENTOR(S): Hayashi, Takeshi; Tan, Hiroaki
 PATENT ASSIGNEE(S): Mitsui Chemical Industry Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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JP 2000223150	A2	20000811	JP 1999-24268	199902 01
				<--
PRIORITY APPLN. INFO.:			JP 1999-24268	199902 01
				<--
OTHER SOURCE(S):	MARPAT 133:166219			

GI

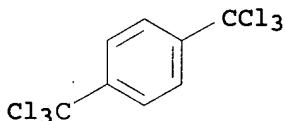


AB The aqueous **electrolyte** solns. are composed of an **electrolyte** and a nonaq. **solvent** containing chlorinated aromatic compds. I, where $m=0-6$, $n=0-3$, and $1 \leq (m+n) \leq 6$. The **solvent** may also contain cyclic and/or linear carbonic **esters**, and the **electrolyte** is selected from LiPF₆, LiBF₄, and organic Li salts LiOSOR₁, LiN(SO₂R₂)(SO₂R₃), LiC(SO₂R₄)(SO₂R₅)(SO₂R₆), and LiN(SO₂OCH₂R₇)(SO₂OCH₂R₈) (R₁₋₈=C₁₋₆ fluoroalkyl groups). The batteries are Li batteries.

IT 68-36-0, 1,4-Bis(trichloromethyl)benzene 95-50-1,
o-Dichlorobenzene 96-49-1, Ethylene carbonate
108-90-7, Chlorobenzene, uses 120-82-1,
1,2,4-Trichlorobenzene 881-99-2, 1,3-
Bis(trichloromethyl)benzene 2136-89-2,
2-Chlorobenzotrichloride 60047-42-9
RL: DEV (Device component use); USES (Uses)
(in nonaq. **electrolyte** solns. for secondary lithium
batteries)

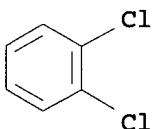
RN 68-36-0 HCAPLUS

CN Benzene, 1,4-bis(trichloromethyl)- (9CI) (CA INDEX NAME)



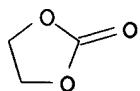
RN 95-50-1 HCAPLUS

CN Benzene, 1,2-dichloro- (9CI) (CA INDEX NAME)

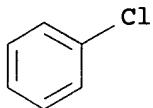


RN 96-49-1 HCAPLUS

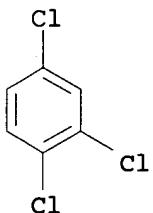
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



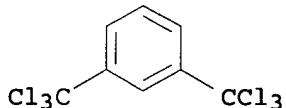
RN 108-90-7 HCAPLUS
 CN Benzene, chloro- (8CI, 9CI) (CA INDEX NAME)



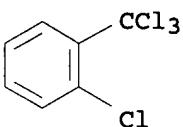
RN 120-82-1 HCAPLUS
 CN Benzene, 1,2,4-trichloro- (8CI, 9CI) (CA INDEX NAME)



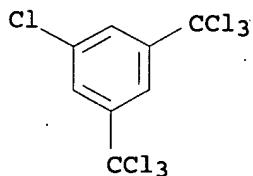
RN 881-99-2 HCAPLUS
 CN Benzene, 1,3-bis(trichloromethyl)- (9CI) (CA INDEX NAME)



RN 2136-89-2 HCAPLUS
 CN Benzene, 1-chloro-2-(trichloromethyl)- (9CI) (CA INDEX NAME)



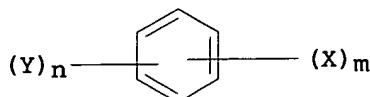
RN 60047-42-9 HCAPLUS
 CN Benzene, 1-chloro-3,5-bis(trichloromethyl)- (9CI) (CA INDEX NAME)



IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST secondary lithium battery nonaq **electrolyte** soln
 IT Battery **electrolytes**
 (nonaq. **electrolyte** solns. for secondary lithium
 batteries)
 IT 68-36-0, 1,4-Bis(trichloromethyl)benzene 95-50-1,
 o-Dichlorobenzene 96-49-1, Ethylene carbonate
 108-90-7, Chlorobenzene, uses 120-82-1,
 1,2,4-Trichlorobenzene 616-38-6, Dimethyl carbonate
 881-99-2, 1,3-Bis(trichloromethyl)benzene 2136-89-2
 , 2-Chlorobenzotrichloride 21324-40-3, Lithium hexafluorophosphate
 60047-42-9
 RL: DEV (Device component use); USES (Uses)
 (in nonaq. **electrolyte** solns. for secondary lithium
 batteries)

L56 ANSWER 32 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:236228 HCPLUS
 DOCUMENT NUMBER: 132:267590
 TITLE: Nonaqueous **electrolyte** in secondary
 battery
 INVENTOR(S): Hayashi, Takeshi; Tan, Hiroaki
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000106209	A2	20000411	JP 1998-278262	199809 30
PRIORITY APPLN. INFO.:				<-- JP 1998-278262
				199809 30
<--				
OTHER SOURCE(S): GI	MARPAT 132:267590			

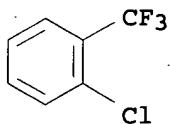


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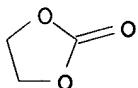
AB The nonaq. **electrolyte** comprises nonaq. **solvent** having general formula I, where X is C1-10 hydrocarbon group or containing ≥ 1 atom selected from O; S; N; P, or Cl; Br; I, Y is F-containing C1-5 hydrocarbon group, n is 1-5, and m is 0-3 with $m+n\leq 6$, e.g., carboxylic acid **ester**, and **electrolyte** (e.g., LiPF6).

IT 88-16-4 96-49-1, Ethylene carbonate
98-08-8 402-31-3 433-19-2
433-95-4
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nonaq. **electrolyte** in secondary battery)

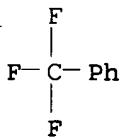
RN 88-16-4 HCAPLUS
CN Benzene, 1-chloro-2-(trifluoromethyl)- (9CI) (CA INDEX NAME)



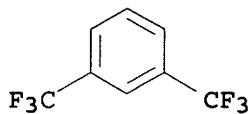
RN 96-49-1 HCAPLUS
CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



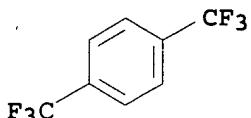
RN 98-08-8 HCAPLUS
CN Benzene, (trifluoromethyl)- (9CI) (CA INDEX NAME)



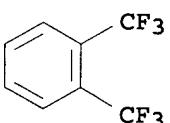
RN 402-31-3 HCAPLUS
CN Benzene, 1,3-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 433-19-2 HCPLUS
 CN Benzene, 1,4-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 433-95-4 HCPLUS
 CN Benzene, 1,2-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



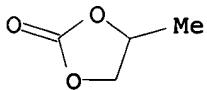
IC ICM H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 Section cross-reference(s): 76
 ST nonaq **electrolyte** secondary battery carbonate
ester
 IT Hydrocarbons, uses
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or
 chemical process); PROC (Process); USES (Uses)
 (fluorine-containing; nonaq. **electrolyte** in secondary
 battery)
 IT Battery **electrolytes**
 Secondary batteries
 (nonaq. **electrolyte** in secondary battery)
 IT Aromatic hydrocarbons, uses
 Carbonate **esters**
 Carbonates, uses
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or
 chemical process); PROC (Process); USES (Uses)
 (nonaq. **electrolyte** in secondary battery)
 IT **Solvents**
 (nonaq.; nonaq. **electrolyte** in secondary battery)
 IT 88-16-4 96-49-1, Ethylene carbonate
 98-08-8 349-60-0 402-31-3 433-19-2
 433-95-4 616-38-6, Dimethyl carbonate 42452-42-6
 54644-50-7 108864-09-1
 RL: NUU (Other use, unclassified); PEP (Physical, engineering or
 chemical process); PROC (Process); USES (Uses)
 (nonaq. **electrolyte** in secondary battery)

L56 ANSWER 33 OF 34 HCPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 1999:756821 HCPLUS

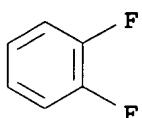
DOCUMENT NUMBER: 131:353712
 TITLE: Nonaqueous electrolyte solutions and
 secondary nonaqueous electrolyte
 batteries
 INVENTOR(S): Hayashi, Takeshi; Hinohara, Akio; Tan, Hiroaki
 PATENT ASSIGNEE(S): Mitsui Chemicals Inc., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11329496	A2	19991130	JP 1999-66663	199903 12
PRIORITY APPLN. INFO.:				JP 1998-60951 A 199803 12
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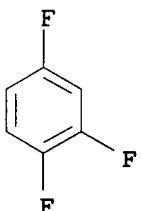
OTHER SOURCE(S): MARPAT 131:353712
 AB The electrolyte solns. contain an electrolyte
 and a nonaq. solvent mixture containing a F containing aromatic compound
 The aromatic compound is a C6H6 derivative having 1-5 F atoms and 0-3 C1-10
 hydrocarbon groups, which may contain O, S, N, P, and/or F; and the
 total number of F atom and the hydrocarbon group is ≤6. The
 solvent mixture also contain carbonate esters, and
 the electrolyte is selected from LiPF6, LiBF4, R3SO3Li,
 R2SO2N(R3SO2)Li, R4SO2C(R5SO2)(R6SO2)Li, and/or
 R7CH2OSO2N(R8CH2OSO2)Li, where R1-8 are C1-6 perfluoroalkyl groups.
 The batteries are secondary lithium batteries using Li, Li alloy,
 or Li intercalating anodes and Li transition metal oxide cathode.
 IT 108-32-7, Propylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing fluoro aromatic compds. for
 secondary lithium batteries)
 RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



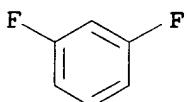
IT 367-11-3, o-Difluorobenzene 367-23-7,
 1,2,4-Trifluorobenzene 372-18-9 402-44-8,
 p-Fluoro-trifluoromethylbenzene 462-06-6, Fluorobenzene
 RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing fluoro aromatic compds. for
 secondary lithium batteries)
 RN 367-11-3 HCAPLUS
 CN Benzene, 1,2-difluoro- (9CI) (CA INDEX NAME)



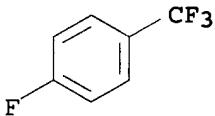
RN 367-23-7 HCPLUS
 CN Benzene, 1,2,4-trifluoro- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



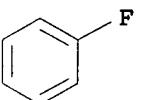
RN 372-18-9 HCPLUS
 CN Benzene, 1,3-difluoro- (9CI) (CA INDEX NAME)



RN 402-44-8 HCPLUS
 CN Benzene, 1-fluoro-4-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 462-06-6 HCPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)



IC ICM H01M010-40
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST lithium battery electrolyte fluoro arom compd
 IT Battery electrolytes
 (electrolyte solns. containing fluoro aromatic compds. for
 secondary lithium batteries)
 IT 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate
 21324-40-3, Lithium hexafluorophosphate

RL: DEV (Device component use); USES (Uses)
 (electrolyte solns. containing fluoro aromatic compds. for
 secondary lithium batteries)

IT 367-11-3, o-Difluorobenzene 367-23-7,
 1,2,4-Trifluorobenzene 372-18-9 402-44-8,
 p-Fluoro-trifluoromethylbenzene 445-27-2 462-06-6,
 Fluorobenzene 701-83-7, 3-Fluorophenyl acetate 93343-10-3,
 3,5-Difluoroanisole

RL: MOA (Modifier or additive use); USES (Uses)
 (electrolyte solns. containing fluoro aromatic compds. for
 secondary lithium batteries)

L56 ANSWER 34 OF 34 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 1997:101101 HCAPLUS
 DOCUMENT NUMBER: 126:106587
 TITLE: Nonaqueous **electrolyte** batteries
 having reactive additives in
electrolytes
 INVENTOR(S): Jinno, Maruo; Uehara, Mayumi; Sakurai, Atsushi;
 Nishio, Koji; Saito, Toshihiko
 PATENT ASSIGNEE(S): Sanyo Denki Kk, Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08321313	A2	19961203	JP 1995-150845	199505 24

PRIORITY APPLN. INFO.: JP 1995-150845
 199505
 24

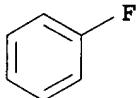
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AB In the batteries having cathodes, anodes using Li as an active mass, nonaq. **electrolytes** obtained by dissolving LiCF₃SO₃ or LiPF₆ in **solvents** of ethylene carbonate, propylene carbonate, and/or butylene carbonate having high dielec. constant, and separators, the **electrolytes** contain 1-20% additives of tri-Me borate, tri-Et borate, di-Me Et boronate, Me Et borinate, Me₃P, tri-Me phosphite, tri-Et phosphite, tri-Me phosphate, tri-Et phosphate, (MeO)₄Ti, (EtO)₄Ti, Al methoxide, Al ethoxide, CCl₄, 1,2-dichloroethane, fluorobenzene, chloromethyl Et **ether**, 1,2-dichloroethyl Et **ether**, β -methoxyethoxymethyl chloride, 1,2-bis(2-chloroethoxy)ethane, 3-bromofuran, cetyltrimethylammonium chloride, 4-chloro-1,3-dioxolan-2-one, Mg(NO₃)₂, Fe(NO₃)₃, FeI₃, Zn(NO₃)₂, ZnCO₃, In(NO₃)₃, Ga(NO₃)₃, and/or HF. The **electrolytes** may contain 1,2-dimethoxyethane. Since the additives react with Li in anodes and the **solvents** and the solutes in the **electrolytes** to form coatings on the anodes for prevention of the reaction between the **electrolytes** and the anodes, the batteries have improved storage property.

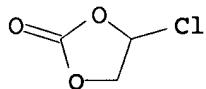
IT 462-06-6, Fluorobenzene 3967-54-2,
 4-Chloro-1,3-dioxolan-2-one

RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
 (electrolyte additive; nonaq. batteries having reactive additives in electrolytes for storage)

RN 462-06-6 HCAPLUS
 CN Benzene, fluoro- (8CI, 9CI) (CA INDEX NAME)

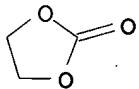


RN 3967-54-2 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-chloro- (9CI) (CA INDEX NAME)

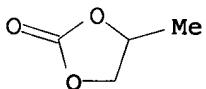


IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 4437-85-8, Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent; nonaq. batteries having reactive additives in electrolytes for storage)

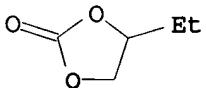
RN 96-49-1 HCAPLUS
 CN 1,3-Dioxolan-2-one (9CI) (CA INDEX NAME)



RN 108-32-7 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-methyl- (9CI) (CA INDEX NAME)



RN 4437-85-8 HCAPLUS
 CN 1,3-Dioxolan-2-one, 4-ethyl- (9CI) (CA INDEX NAME)



IC ICM H01M006-16
 ICS H01M010-40
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
 ST nonaq battery electrolyte reactive additive storage;
 lithium anode nonaq battery electrolyte additive

IT Battery electrolytes
 (nonaq. batteries having reactive additives in
 electrolytes for storage)

IT 7439-93-2, Lithium, uses
 RL: DEV (Device component use); USES (Uses)
 (anode active mass; nonaq. batteries having reactive additives in
 electrolytes for storage)

IT 56-23-5, Carbon tetrachloride, uses 78-40-0, Triethyl phosphate
 107-06-2, 1,2-Dichloroethane, uses 112-02-7,
 Cetyltrimethylammonium chloride 112-26-5, 1,2-Bis(2-
 chloroethoxy)ethane 121-43-7, Trimethyl borate 121-45-9,
 Trimethyl phosphite 122-52-1, Triethyl phosphite 150-46-9,
 Triethyl borate 462-06-6, Fluorobenzene 512-56-1,
 Trimethyl phosphate 555-75-9, Aluminum ethoxide 594-09-2,
 Trimethylphosphine 623-46-1, 1,2-Dichloroethyl ethyl ether
 865-31-6, Aluminum methoxide 992-92-7, Tetramethylorthotitanate
 3087-36-3, Tetraethylorthotitanate 3188-13-4, Chloromethyl ethyl
 ether 3486-35-9, Zinc carbonate 3967-54-2,
 4-Chloro-1,3-dioxolan-2-one 3970-21-6, β -Methoxyethoxymethyl
 chloride 7318-82-3, Dimethyl ethyl boronate 7397-46-8, Methyl
 diethyl borinate 7664-39-3, Hydrofluoric acid, uses 7779-88-6,
 Zinc nitrate 10377-60-3, Magnesium nitrate 10421-48-4, Iron(III)
 nitrate 13494-90-1, Gallium nitrate 13770-61-1, Indium nitrate
 15600-49-4, Iron iodide (FeI₃) 22037-28-1, 3-Bromofuran
 RL: DEV (Device component use); MOA (Modifier or additive use); USES
 (Uses)
 (electrolyte additive; nonaq. batteries having reactive
 additives in electrolytes for storage)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene
 carbonate 110-71-4, 1,2-Dimethoxyethane 4437-85-8,
 Butylene carbonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte solvent; nonaq. batteries having
 reactive additives in electrolytes for storage)

IT 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium
 trifluoromethanesulfonate
 RL: DEV (Device component use); USES (Uses)
 (electrolyte; nonaq. batteries having reactive
 additives in electrolytes for storage)

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